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PROGRESSIVE MEDICINE.

A QUARTERLY DIGEST OF ADVANCES, DISCOVERIES,
AND IMPROVEMENTS

IN THE

MEDICAL AND SURGICAL SCIENCES.

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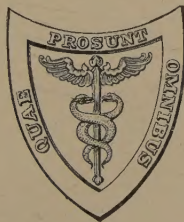
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DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART,
LUNGS, AND BLOODVESSELS—DISEASES OF THE SKIN—
DISEASES OF THE NERVOUS SYSTEM—
OBSTETRICS.



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PROGRESSIVE MEDICINE.

SEPTEMBER, 1900.

DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART, LUNGS, AND BLOODVESSELS.

BY WILLIAM EWART, M.D., F.R.C.P.

CROUPOUS PNEUMONIA.

The Treatment of Pneumonia. A retrospect of the therapeutics of pneumonia would be wholly discouraging but that its lessons may perhaps simplify our task, doubtless to the advantage of our patients, by causing us to strike off our list those remedies which have been indorsed with authoritative support and with equally authoritative disapproval. Sir Herman Weber¹ witnessed as a student the relative failure of antimony, of opium, of simple salines, and of venesection, and has himself realized the relative uselessness of quinine and of the salicylates, his present feeling being in favor of small doses of antimony, of a little opium, and sometimes of moderate bleeding.

The failure of heroic remedies and of heroic doses leaves us less discontented with our simpler means. "Which of the potent drugs shall we use?" is a question inseparable from another: "How will they act?" In pneumonia the behavior of drugs is problematical; of this there is no better instance than that of digitalis, which Sir Thomas Lauder Brunton has shown to be inert whilst the pyrexia lasts and apt to take massive action later on.

With the milder remedies we are on safer ground. For instance, the choice of a local application is a legitimate field for individual preference. No pneumonic patient ever died from warm poulticing, while, according to a recent medical plebiscite, cold applications can only do

¹ Practitioner, February, 1900.

good. Between the two the patient's feelings may be allowed to decide. Again, moderate counter-irritation or leeching cannot do harm, and may relieve; and the same may be said of some of our internal remedies. As a fact, when attacked with pneumonia a man has it in him to die or to recover, and while his life may be most easily cut short, it is often exceedingly difficult to prolong.

Our first business when summoned to a case is to judge, with a view to treatment, to which of the following classes the patient is likely to belong: 1. The pneumonias that recover. If of sound constitution almost all children recover when one lung only is affected, and usually, also, when both are involved. If sound and temperate, youths and young adults often recover, even from a double pneumonia. 2. The pneumonias that do not recover. The septic and pyæmic pneumonias are exceedingly fatal at all ages, but much more so in the aged and in the intemperate. But to speak only of simple fibrinous pneumonia, recovery (*a*) in drunkards and (*b*) in old people is quite the exception, and in them double pneumonia is almost invariably fatal. 3. The pneumonias that may recover. The remaining group is included between the extremes in respect of age and of alcohol. The prognosis is anxious, and the treatment a test for our therapeutical resources and acumen.

Little is needed in the first set of patients beyond suitable diet and the comforts of nursing. Leave them alone, and they will defervesce. But symptomatic treatment may be indicated and should not be denied them. For group 2, where the prognosis is desperate from the first, if we should know of any remedy that will benefit and perhaps cure pneumonia the time to employ it is at once. It is useless to postpone its employment until death is announced by the running pulse, the cold sweat, and the livid complexion. The third group is the uncertain and responsible one. The total abstainer from youth and the abstemious will fare best, and any risks from treatment must be avoided. The drinker is in danger from the first, as are also all toxæmic patients (influenza, etc.). The aspect may be bright and even cheerful, but after three or four days, when the stage of toxin has been reached, the vitality may be completely overwhelmed. The rapidity and the degree of this change is a guide to our prognosis, but it is at the earliest stage that it should have been made and our remedies applied.

THE GREAT PRINCIPLES OF TREATMENT. (1) To sustain vitality by saving energy, and, if possible, by increasing its supply, is the basis of all our treatment. (2) The first causal indication would be to check the pneumococcus, and (3) failing this, the second to remove or to neutralize the toxin. (4) The clinical, symptomatic, or restorative indication is to support the functions, and in particular the heart, although much of the so-called "cardiac failure" is hopeless failure of bulbar vitality.

Can we destroy the pneumococcus? Outside the body its prophylactic destruction is easy. Julius Dreschfeld,¹ in the case of weak or elderly people exposed to the infection, recommends a 5 per cent. solution of carbolic acid, or a 1:1000 corrosive sublimate solution, to be added to the sputum as a measure of safety; but once settled upon the lung, the pneumococcus defies our present weapons. The abortive treatment can only be contemplated, according to H. A. Hare,² in a few sthenic cases quite at the early stage.

Sodium salicylate has been tried, not only as a germicide and as an antipyretic, but also (by de Becker) as an abortive, but it has not been approved. Andrew H. Smith³ now prefers creosotal as less depressing to the heart and digestion, and stimulants and vasodilators rather than digitalis in the presence of cyanosis. Nevertheless, William C. Sebring⁴ gives reasons for advocating sodium salicylate in doses of 8 to 10 grains every two hours: (1) It is fatal to the pneumococcus in 1 per cent. solution in five minutes; (2) it quiets the pulse; (3) it is a general sedative, almost a hypnotic; (4) it relieves pleuritic pains; (5) it inhibits delirium; (6) the pulse remains fairly good; (7) the patient perspires freely and the temperature seldom exceeds 103° F., and almost always drops by lysis (nineteen times in twenty cases); (8) there is a smaller percentage of complications.

THE SERUM TREATMENT is the rational remedy, but it has hitherto fallen far short of our requirement. Joseph McFarland and Clarence Wyman Lincoln⁵ close an interesting article (with bibliography) on "Antipneumococcus Serum" with hopeful conclusions and with an account of their own method. De Renzi had only two deaths in fourteen cases treated; Pane one death in nine; Cooke two, and Spurnell and Zanoni each one successful case. But pneumonia may recover without any treatment. Washbourn, although hopeful, speaks of the present results with considerable reservation; and that is also our feeling. At the Tunis Congress (1898) opinion was chiefly in favor of the method; but Banti and Pierachinni have had a large series of cases and report no beneficial influence. The dose of the protective serum is from 10 to 20 c.c., to be repeated two or three times a day until the constitutional symptoms subside.

Antonio Fanoni's⁶ emphatic recommendation of Pane's serum is based upon six cases of recovery after 10 c.cm. injections twice daily (or even as much as 150 c.cm. in twenty-four hours). He has found them harmless even when relatively inactive from keeping.

¹ Practitioner, March, 1900.

² Therapeutic Gazette, July 15, 1899.

³ Medical News, New York, December 16.

⁴ Medical Record, April 23, 1899.

⁵ Journal of the American Medical Association, December 16, 1899.

⁶ New York Medical Journal, August 26, 1899, and Medical Record, March 10, 1900.

Can we at least check the growth by antiseptics? The real microbe destroyer is the phagocyte. In children, whose pneumonia is so easily recovered from, leucocytes are more numerous than at a later age, and their vitality unimpaired. Hamilton Fish proposes to increase leucocytosis by subcutaneous injections of nuclein; but in broken-down constitutions we may try in vain to sufficiently raise their number and their energy.

Can the toxin be destroyed or neutralized? Hitherto bacteriology does not furnish us with the antidote. Indeed, A. G. Auld's¹ recent inoculations of rabbits with the toxins of the pneumococcus heightened instead of diminished the susceptibility of the animals. The rational indication, that of removing the poison, or at least of diluting it, by bleeding and by injecting saline fluid, remains for our consideration. Edward F. Wells,² who expects that pneumonia will become a preventable and largely curable affection, has advocated venesection (except in the aged and in the young) in conjunction with subcutaneous injections of chlorides of sodium, potassium, and calcium. This is also part of the treatment recommended by Hamilton Fish. I regard saline infusion as likely to do more good without the bleeding. Bosc and Vedal,³ Galvagni, Roger, and Houel⁴ all report favorable results. Clement A. Penrose⁵ advocates it in combination with oxygen inhalations, the benefit of which is increased by a previous infusion. Penrose recommends that the heart should be examined from time to time, particularly the second pulmonic sound, lest excessive accentuation or a murmur should indicate the necessity for immediate bleeding. High enemata of saline solution, suggested by Edward F. Wells, may sometimes be well borne, but are too likely to exhaust the patient. These measures may sometimes relieve a late toxæmia, but they come too late when the signs of approaching death are present. In all cases which justify its adoption the time for the infusion seems to me to be the early stage of comparative well-being, when the toxin may possibly be washed out before it has acquired any concentration. As urged on another page (see Saline Injection), a remedy so potent against extremely heavy odds must be yet more capable for good where there is still material to work with. As administered early and repeated daily it may save some of the weaker lives. I would associate with it the continuous oxygen inhalations recommended by George Stocker and the iron and mercury treatment which I have adopted in typhoid fever from Wedgewood's original suggestion :

¹ British Medical Journal, January 20, 1900.

² Medical Record, June 10.

³ Revue de Médecine, 1897-98.

⁴ Revue de Thérapeutique, June, 1899.

⁵ Johns Hopkins Hospital Bulletin, July, 1899, p. 127.

R.—Ferri perchlor.	. . . . .	℥ 15.
Liq. hydrarg. perchlor.	. . . . .	℥ 20.
Glycerin. aurantii	. . . . .	fʒ j.
Aquæ	. . . . .	ad fʒ j.
M. et ft. To be taken three or four times daily.		

A REVIEW OF TREATMENT is supplied by *The Practitioner* in its numbers for February and March, 1900. Sir Samuel Wilkes strongly believes in 5-grain doses of Dover's powder every four hours, and deplors the neglect of opium. He approves of antimony in some pneumonias; he does not believe in blisters, but in warm fomentations and woollens.

H. A. Hare¹ recommends reducing the pyrexia by the local application of cold and a little aconite and opium internally. Antipyretics are not approved, but rather cold sponging and ice-bags to the head and over the heart. Late venesection is dangerous. He believes that a bounding pulse calls for sedatives rather than stimulants, and that digitalis may have been too frequently and too liberally prescribed. Belladonna may help vasomotor relaxation. Strychnine is best used in large doses at the right time rather than as a continuous stimulant. For this form of stimulation alcohol and coca are preferable. He remains in doubt as to the value of oxygen. Nitroglycerin is of great service in aged patients and in those with high arterial tension.

Sir William Broadbent² deprecates systematic dosing with antipyretics, although a single initial dose has been thought by some to cut short an attack. The line of treatment is determined by the antecedents and by the front which the patient presents to the attack. The nourishment must be sustaining and light. Stimulants, often useful, but rarely necessary, should be reserved for the special indications; but in exceptional cases large quantities of brandy or even of brandy and champagne are indispensable. For sleeplessness and delirium the hypodermatic use of morphine is recommended.

Regular medication, for what it is worth, may include simple salines, ammonium acetate and citrate, and potassium citrate, most refreshing in the effervescing form, with an excess of ammonium carbonate where the pulse is flagging, and with quinine tablets dissolved in the acid part or separate. Strychnine ($\frac{1}{60}$ to $\frac{1}{40}$ grain hypodermatically) may be required early, and sometimes combined with digitalis. Digitalis used systematically is of doubtful value. The effects of oxygen inhalation are striking, but fugitive. Broadbent is not convinced, although this has been stated, that the ice-bag over the affected lung will shorten the attack. Extensive statistics would be needed to prove that it is beneficial. Poultices were previously much believed in, and their good results recommend them, provided the application be managed judiciously.

¹ Therapeutic Gazette, July 15.

² Practitioner, July, 1900.

He regards as legendary the virtues of a gigantic blister. A more important question is that of venesection. It may be of great service quite early when the right ventricle is laboring against an unusual congestion of the lung, the patient cyanosed, unable to speak, and scarcely able to breathe or cough, with turgid cervical and temple veins, staring eyes, and beads of sweat, the pulse hardly perceptible, and the heart beating violently. This is the time to bleed. At later stages, when asthenia sets in, the heart is, of course, dilated, but bleeding might at best partly empty it; it cannot remedy its toxic paralysis.

Dreschfeld dwells upon venesection, tartar emetic, digitalis, and Balfour's treatment by tincture of digitalis and chloral; also upon perchloride of iron, recommended by the late Sir Andrew Clark, and, lastly, upon the pilocarpine treatment, none of which has been found effectual. We have, therefore, to fall back upon symptomatic treatment. Dreschfeld is in favor of quinine (5 to 10 grains in twenty-four hours) and an ice-bag to the affected side (one hour on, one-half hour off). In all cases of influenzal pneumonia he recommends digitalis and *nux vomica*, with carbonate of ammonia, which is best borne in the form of a powder added to milk (5, 7, to 10 grains). Oxygen inhalations often relieve the dyspnoea. Pleuritic pain is much relieved by leeches, poultices, or morphine injections, also by blisters, which, however, should be avoided in albuminuria. The pyrexia is treated by cold baths on the Continent, but here by the cold pack, which is continued for fifteen to twenty minutes, alcohol being administered at the beginning and at the end of the operation. Quinine and phenacetin are the only antipyretics which should be prescribed. Salicylate of quinine may be beneficial in young and strong rheumatic subjects. In alcoholics Dreschfeld administers a fresh infusion of digitalis (20 grains to 6 ounces; one tablespoonful every two hours) and about 6 ounces of brandy daily. This treatment should begin quite early. In old people digitalis is not safe, and strychnine, ammonium carbonate, and alcohol are usually the best treatment. Ether, citrate of caffeine, camphor, and musk may also be resorted to. Dyspnoea, if due to flatulency, may be treated with creosote, sodium sulphocarbolate, or enemata of turpentine or *asafoetida*. In insomnia chloralamide (10 to 20 grains) or paraldehyde (2 to 3 drachms) are better than trional and sulphonal for alcoholics. For the nervous and excitable, 20 to 30 grains of bromide, or 20 grains of chloral, with $\frac{1}{2}$ ounce of infusion of digitalis, are valuable. A dose of morphine or 10 grains of Dover's powder may be administered safely. Dreschfeld has twice injected hydrobromide of hyoscine ($\frac{1}{150}$ grain) with good results in young alcoholics. Delirium tremens is best treated with 2 to 3 drachms of paraldehyde and cold sponging, together with chloral and digitalis. The symptoms of cough, dyspepsia, diarrhoea, and con-

stipation are also fully noticed, as well as the various forms of pneumonia.

The latest Congress, that of Wiesbaden, which began on April 9, 1900, has not relieved our uncertainties or added to our resources. Von Koranyi, of Budapesth, relies upon quinine and sodium salicylate as antipyretics, upon cold baths for asthenia, and upon leeches and ice for delirium. His favorite external application is a large mustard poultice. He dwells upon the prophylactic importance of cleansing the mouth and nose.

Naunyn, of Strasburg, uses potassium iodide in those cases where bronchitis is a complication. He believes, with Spielmann, that ergotin will constrict the smaller vessels during collapse; but Pick, of Prague, bases upon his many researches the conclusion that neither ergot nor its derivatives have any influence upon the vessels except in gravid subjects.

PLAIN DIRECTIONS FOR TREATMENT. Mitchell Bruce provides us with useful hints (*Principles of Treatment*, Edinburgh and London, 1900). (a) General management and nursing. Rest in bed in a large, well-ventilated room (temperature 60° to 62° F.), and no gas. Bed-clothing light, posture such as the patient will select, but the back well supported; and a light, loose woollen garment to open down the back. One or two nurses day and night. (b) Diet: Five-ounce feedings every two hours (milk, 2 pints, beef-tea, 1 pint, perhaps thickened with bread crumbs or biscuit powder, one or two eggs, no stimulants unless specially indicated). (c) Local applications: Cotton-wool jacket or poultices, fomentations, ice-bag or ice poultices. (d) Treatment: If there be pain and anxiety, tartrate of morphine (gr. $\frac{1}{6}$ to $\frac{1}{4}$; aquæ dest., \mathfrak{m} v, subcutaneously; or we may leech freely, and in threatened asphyxia bleed (6 to 10 ounces). As a purgative:

R.—Massæ pil. hydrargyri gr. iiij.
 Extracti colocynthidis compositi gr. iss.
 Extracti hyoscyami gr. ss.

M. et ft. in pil. To be taken at once and followed by a saline purgative in six hours.

R.—Potassii citratis gr. xx.
 Liquoris ammonii acetatis $\overline{3}$ ss.
 Aquæ chloroformi $\overline{3}$ ij.
 Aquæ dest. ad $\overline{3}$ j.

Every six hours, sometimes with the addition of antimonial wine, \mathfrak{M} v.

In influenzal pneumonias:

R.—Quinini sulphatis gr. v.
 Acid. nitric. dil. \mathfrak{M} xx.
 Tinct. aurantii amari $\overline{3}$ ss.
 Aquæ chloroformi $\overline{3}$ iv.
 Aquæ dest. ad $\overline{3}$ j.

In rheumatic pneumonias :

R.—Salicin gr. xvi.
 Extracti glycyrrhizæ liquid. ℥ xxx.
 Aquæ dest. ad ʒj.
 Every six hours.

At the second and subsequent visits, until the crisis, the general management, nursing, diet, and local measures to remain as before. The acid quinine mixture may be substituted for the saline after three or four days.

For the relief of special symptoms of distress or danger—in heart-failure and pulmonary œdema—3 ounces of brandy, increased to 4 or even 8, in frequent doses.

R.—Strychninæ hydrochlor. gr. $\frac{1}{32}$.
 Aquæ dest. ℥ v-x.
 Subcutaneously every six hours. Oxygen freely, as required.

In insomnia, delirium, etc., various sedatives, such as chloralamide, gr. xv to xxv ; or sulphonah, gr. xx, or :

R.—Paraldehyde ℥ xxx to c
 Emulsio amygdalæ ad ʒj

or, hypodermatically :

R.—Morphinæ tartratis gr. $\frac{1}{2}$.
 Atropinæ sulphatis gr. $\frac{1}{100}$.
 Strychninæ hydrochlor. gr. $\frac{1}{32}$.
 Aquæ dest. ℥ x.

For diarrhœa an opiate enema may be needed, but at first the following dose should be tried after each motion :

R.—Pulveris cinnamomi gr. ijss.
 Pulveris myristicæ gr. ij.
 Pulveris caryophylli gr. j.
 Pulveris cardamomi gr. j.
 Sacchari gr. xx.
 Cretæ preparatæ gr. vii.
 Tr. catechu comp. ʒ ij.
 Aquæ chloroformi ʒ ss.
 Aquæ dest. ad ʒj.

At the crisis the general management includes external warmth, stimulants, and, if necessary, the strychnine injection.

During the post-critical stage alimentation is gradually raised, stimulation reduced, and the previous medicines are replaced by a mild tonic, such as :

R.—Tr. nucis vomicæ ℥ v.
 Ammonii carbon. gr. iv.
 Sp. chloroformi ℥ v.
 Infus. quassiæ ʒj.

Take in one dose, three times a day, five minutes before meals.

In convalescence the patient is to sit up gradually; a little sound wine is to be taken with meals, and a change to a mild, bracing climate is desirable. Liquid extract of cinchona, with a small dose of nitric acid and syrup of orange, is an excellent tonic, to be taken after meals.

THE HYDRIATIC TREATMENT has many advocates. Richard K. Macalester¹ shares in the growing impression that heart-failure is best averted by stimulating the skin and the circulation and by deepening the inspirations.

The technique of the chest compress is as follows: A threefold piece of linen or muslin is cut to fit the entire chest down to the umbilicus, with a slit in the axillary region. This is wrung out at a temperature of 60° F., covered with a broader piece of thin flannel, and secured with safety pins. It is changed every half-hour at first, then every one or two hours until the temperature falls to 100° F. Baruch uses for children tub baths of five to eight minutes' duration, with continuous friction, at a temperature of 95° F., gradually reduced to 85° or 80° F. The wet pack (temperature 60° to 70° F.) is indicated in the graver cases. Copious draughts of cold water at regular intervals are recommended both for children and adults.

In the atelectasis of bronchopneumonia Albert Abrams² recommends the application of cutaneous stimuli to the chest, on the principle of the "lung reflex," which he has elsewhere described.³ He refers to Moccucci's original observation,⁴ confirmed for other organs by himself, that one of the effects of spraying the left side of the abdomen with ether is to reduce markedly the volume of the spleen.

J. D. Herman⁵ believes in the ice-bag, which, with the protection of a towel, has no injurious effects; no age is a bar. Next to ice, strychnine and digitalis are probably of greatest service.

Blisters followed by poultices are strongly urged by Jesse Ewell⁶ as the best method of treatment, to be adopted early and often repeated.

The silver-nitrate treatment of Caccianiga⁷ has now been tried in sixty cases, of which only three died. The dose was from 0.10 gramme for children to 0.25 or 0.30 gramme in adults, given in pill or suspension; or a 0.50 per cent. solution of protargol hypodermatically. The pyrexia drops within the first twenty-four hours (by crisis in forty-eight-hour cases and by lysis in twelve hours), lysis generally occurring with the

¹ Medical News, New York, September 9, 1899.

² New York Medical Journal, January 13, 1900.

³ Medical Record, April 28, 1899.

⁴ *Riforma Medica*, 1898, p. 208.

⁵ Journal of the American Medical Association, May 6, 1899.

⁶ Virginia Medical Semi-Monthly, November 24, 1899.

⁷ Boll. dell. Assoc. Sanitat., Milan, An. i., No. 9.

small doses ; but the pulse does not quiet down so quickly, and resolution appears to be somewhat prolonged.

For the treatment of cardiac asthenia in pneumonia Henry L. Elsner¹ avoids nitroglycerin and veratrum viride and recommends strychnine and digitalin hypodermatically, and sparteine sulphate ($\frac{1}{4}$ grain) with caffeine (4 to 6 grains) internally, and Tokay wine.

G. Corin² advocates digitoxin in a single dose of 3 mg. as likely to favor the process of autovaccination after the fashion of Pane's serum injections. This is surely too slow and risky a remedy.

The latest views as to the treatment of infantile pneumonia are contained in the papers of W. P. Northrup³ and of W. A. Dickey,⁴ who suggest a trial of salicylate of cinchonidine and of creosote

In the bronchopneumonia of measles J. A. Larrabee⁵ recommends bringing out a thorough rash by means of a thick towel wrung out of hot mustard-water (1 drachm to a quart) wrapped around the child, and iodide of potassium internally, or the following prescription :

R.—Syrup. acid. hydriodici,
 Syrup. tolu,
 Syrup. pulv. Doveri ʒi ʒj.
 Ft. mist.
 Sig.—A teaspoonful every two hours.

Senile pneumonia is fully dealt with by Robert H. Babcock, whose excellent study of it should be read in the *Journal of the American Medical Association*, August, 1899.

The Diagnosis, Prognosis and Complications. According to Sir William Wilks,⁶ pneumonia is often overlooked in practice. No patient can recover in whom red hepatization has once passed into gray hepatization.

The diagnosis of central pneumonia may be assisted by the radioscope, as shown by G. Variot and G. Chicot.⁷ Blood examinations are suggested by Hamilton Fish⁸ for the diagnosis, prognosis, and treatment of pneumonia. He finds that the specific gravity is increased, the alkalinity decreased, and notices a poikilocytosis and a leucocytosis of the polynuclear neutrophiles, and sometimes the presence of pneumococci in the blood.

¹ Transactions of the American Climatological Association, 1899, vol. xv.

² Ann. de la Société Méd. Chir. de Liège, June, 1899.

³ Medical Age, October 25.

⁴ Columbus Medical Journal, July 5 ; Journal of the American Medical Association, August 5.

⁵ International Clinics, 1898, vol. ii., p. 91.

⁶ Practitioner, February, 1900.

⁷ Journ. de Clin. et de Chir. Infantiles, March 9, 1899, vol. vii., p. 151.

⁸ Medicine, Detroit, June, 1899.

The liver is described by Malin¹ as often enlarged, probably passively.

J. Wieting² has endeavored to track the diplococcus along the blood and lymph routes. In cases regarded as primary a trauma or a thrombus will sometimes identify its site of entrance.

THE COMPLICATIONS AND SEQUELÆ. These have been studied by Sello,³ and are further classified by R. B. Preble⁴ into three groups—mechanical, ineffective, and toxic. The pulmonary complications include the puzzling “massive pneumonia,” with its mechanical plugging of the bronchi, which cease to conduct sound (Grancher). Exploratory puncture alone can decide between this pneumonia and pleural effusion. The evolution (eight to ten days) is rather slow, but Queyrat finds that recovery is the rule (24 in 27 cases). It is more common in the male (24 to 3), and more frequent on the left side than on the right (23 left to 4 right).

Delayed Resolution, with or without added catarrh. *Induration* (probably less common than Sello’s estimate, 2.1 per cent.) variously attributed to adhesions, to senility, alcoholism, general debility, venesection (Laennec), or bacterial irritation (Fraenkel). *Abscess* (1.2 per cent., Aufrecht; 1.5 per cent., Sello) demonstrated by pulmonary shreds, elastic fibres, hæmatoidin, etc., in the sputum; and *gangrene*, still less common (0.4 per cent., Sello; Aufrecht, none in 1501 cases), apt to lead to pneumothorax and calling for surgical treatment.

Post-influenzal suppuration is an analogous result to the pulmonary gangrene described by Korte and Fraenkel. In two cases Karewski⁵ had to resect ribs.

A. H. Levings⁶ has reported two cases of gangrene of the lung after pneumonia, in which operation was successful. He recommends surgical interference in most cases which are progressive, the only exceptions being the instances of absolutely diffuse gangrene.

The Pleural Complications. (1) The statistics of simple pleurisy (4 to 15.8 per cent.) are not reliable, since an accumulation of less fluid than 400 c.c. cannot be demonstrated in adults. The mortality is only slightly increased by pleurisy (by 0.8 per cent., Huss). (2) Empyema (Aufrecht, 1.5 per cent. in 1501 pneumonias; Sello, 4.5 per cent. in 750 cases) occurred on the left in two-thirds of Sello’s cases, although right-sided pneumonia is the more frequent. According to Netter, 25 per cent. of metapneumonic empyemata rupture into a bronchus in the third

¹ Gaz. degli Osped., April 2, 1899.

² Mitt. a. d. Hamburg. Staats Krk., ii., 2; Journal of the American Medical Association, August 5.

³ Zeitschrift für klinische Medicin, xxxvi.

⁴ Journal of the American Medical Association, August 19 and 26, 1899.

⁵ Ver. für Inn. Med., October 30.

⁶ New York Medical Journal, October 14.

or fourth week. A pneumothorax is not often associated with empyema in pneumonia.

The Cardiac Complications. Cardiac failure is now identified as the work of the pneumococcus toxins rather than of the pyrexia. Slight cardiac displacements, particularly to the right, sometimes simulate a dilatation (Aufrecht). Accentuation of the second sound is not uncommonly combined with a systolic murmur, suggesting mitral insufficiency. With a pulse-rate at 120 one-third of Griesinger's patients died; 41 per cent. died when it exceeded 120. Bradycardia, even down to 40 per minute, is not rare after the crisis. The rhythm may be irregular without serious import, but a cantering rhythm announces heart-failure (Fräntzel).

Pericarditis by extension is more common on the left side, but it is not frequent (Osler, in 5 per cent. only of autopsies after pneumonia; Banti, in 5.4 per cent.; Netter, in 8 per cent.).

Endocarditis (0.2 to 0.9 per cent.) is usually ulcerative, sometimes verrucose. Meningitis occurs in seven-ninths of the cases of endocarditis, while one-third of the cases of meningitis showed endocarditis. Of Netter's 55 cases of ulcerative endocarditis 23 were due to the pneumococcus, and 16 of these had pneumonia. The aortic and pulmonary valves are more often affected than the auriculo-ventricular.

Hepatic Complications. Jaundice (variously estimated at 0.6 per cent. in Vienna, 0.9 per cent. in Stockholm, 28.3 per cent. in Basle, and at 1 per cent. by Aufrecht) may be due to venous compression of bile capillaries, inertia of the diaphragm, hæmolytic action of the diplococcus (Banti), but more commonly to catarrh of the bile-ducts or duodenum.

Gilbert and Grenet found inflamed ducts and the bacillus coli communis three times. Naunyn and Minkowsky's experiments have shown that "hæmotogenous" icterus is all really hepatogenous. The frequency of jaundice probably fluctuates with the virulence of epidemics. It has been pointed out in France that dilatation of the right ventricle may be occasioned by jaundice irrespective of its cause; this would be a serious complication in pneumonia.

Renal Complications. Albuminuria with hyaline and granular casts is much less frequent in children than in adults (23.1 and 52.1 per cent. respectively by Fraenkel and Reiche). Nephritis, which may perhaps be set up by the pneumococcus or by its poisons, is not common (1.4 per cent. in a total of 11,690 cases from aggregated statistics). It may occur at any period, and suggests intensity of infection.

Other Infective Complications may occur, chiefly otitis media and arthritis. Monarticular pains may simulate the latter. Barthier¹ has

¹ Thèse de Paris, 1899.

noted gangrene of the extremities as a rare complication. Preble concludes his valuable study with a sketch of the *nervous complications*. Cerebral symptoms and delirium (Huss, 6.9 per cent. ; Aufrecht, 5.3 per cent. ; Preble, 9 per cent. ; Vienna statistics, 0.9 per cent. only) are thought to be more marked when pneumonia affects the upper lobe.

The Pneumonic Paralyses (hemiplegia, monoplegia, or aphasia with paralysis of face and arms) are also said to be more common in upper-lobe pneumonia ; they may last only a few hours or for days, and may be due to atheroma (Lépine) or to pneumotoxin (Stephen).

Plague Pneumonia. In a special set of cases of plague with pulmonary developments and usually without enlarged glands, the general symptoms are hardly more severe for five to ten days than those of a simple bronchitis, and the local lung symptoms are vague, except a strikingly weak and rapid pulse. Death occurs with unexpected suddenness between the fifth and the tenth day. William C. Hossack has seen five cases.

In connection with the bacteriology of pneumonia we only note that N. Pane¹ has proved experimentally that the capsule of the pneumococcus is a late production, due to degeneration. Clinically, he has observed that in the sputum the cocci do not possess capsules until the later stages of the disease, when the sputum has become partly purulent, and that the serum treatment is most effectual in those cases where most capsulated cocci occur.

M. Wassermann² believes that the antitoxic substances are generated in the bone-marrow and probably collected in the lymphatic organs, their liberation coinciding in man (G. and F. Klemperer) with the crisis. He also localizes in the bone-marrow the origin of the leucocytosis of pneumonia. In animals he has found that pneumonic bone-marrow reacts two and a half times more strongly than serum.

Fatal inflammations of the lung or bronchi are sometimes classified as due to an anæsthetic when they are instances of septic inhalation pneumonia. This is explained by William H. Bennet in his remarks on "Vomiting Considered from Some of its Surgical Aspects, especially with Reference to a Feculent Vomit, which is Sometimes Curative."³ In operations on abdominal cases with vomiting of putrid fluid, septic inhalation pneumonia is one of the worst dangers.

INFLUENZA AND ITS TREATMENT.

Influenza has made another world-wide visitation, and in London the mortality rose to 316 during the first week in 1900. It was also raging

¹ Centralb'att für Bacteriol., etc., xxiv., p. 289.

² Deutsche medicinische Wochenschrift, 1899, xxv., 9.

³ British Medical Journal, March 24, 1900.

at the antipodes throughout Australia, frequently complicated by fatal pneumonia.

Influenza, as well as the plague, has been treated by large doses of carbolic acid. Edward Gooddy,¹ who had ordered doses of 7.5 grains, but whose patients had taken by mistake the equivalent of 1 drachm of the pure acid in two hours, was surprised to find that, far from this heroic dose having disagreed, it had cured the disease and enabled the patient to resume his work the next day.

Influenza may also be treated by Lutaud's² method. As a prophylactic during epidemics, 20 cgm. of sulphate of quinine should be taken daily, and the severe pain of influenza is checked by the following mixture :

R.—Antipyrin	3j.
Alcohol, 96 per cent.	3 ijss.
Syrup. rubi idæi	3 ij.
Aquæ dest.	3 iij.—M.

Sig.—A dessertspoonful. To be taken every hour until the pains are arrested.

Diuresis is to be promoted by hot drinks, and if the temperature should reach 39° C., 50 cgm. of sulphate of quinine should be administered in one or two doses. A saline purge is needed on the second day.

Post-influenzal or post-malarial neuralgias are among the important sequelæ often difficult to treat. Henry Posert³ finds that dorso-intercostal neuralgias are most refractory. For them he recommends galvanism, quinine, sodium salicylate with small doses of codeine. One form is especially severe and even excruciating, extending on either side of the sixth to the twelfth dorsal spines, which are themselves not sensitive to light touch. Dry hot air and the coal-tar analgesics sometimes relieve it.

Nasal fetor, a frequent accompaniment of the dyspnœa of various respiratory and cardiac affections, can usually be relieved by the simple device of placing carbolized oil (1 in 60) into the nostrils when the head is well thrown back, without the necessity of resorting to the stronger measures adapted to the treatment of ozæna, such as formalin spray (1 in 1000, with a little glycerin) recommended by Adolph Bronner.⁴

The bacteriology of "common colds" has been studied by Edmund Cautley,⁴ who refers us to his previous publications. His general results lead him to conclude that the "common cold" or "influenza cold" is due to a type of organism closely allied to the bacillus of influ-

¹ Lancet, April 7, 1900.

² Journ. Med. de Paris; Journal of the American Medical Association, March 3.

³ Memphis Lancet, February, 1900.

⁴ British Medical Journal, October 14.

⁵ British Medical Journal, September 2.

enza. The infectious origin of catarrhs and bronchitis was also insisted upon in Samuel Gee's Lumleian Lectures; he deprecates a revival of Gothic architecture, because it sacrifices too much light and air.

THE TREATMENT OF BRONCHITIS.

Acute Bronchitis. The drift of R. Reilly's¹ remarks may be gathered from his conclusions: (1) Acute bronchitis is a symptom. (2) The diseased condition of which it is a symptom is a toxæmia, which may be due (a) to the so-called uric-acid poison; (b) to auto-intoxication from the intestinal canal; (c) to specific infectious agents. (3) The treatment with nauseous mixtures under the name of expectorants is illogical and is opposed to modern therapeutics. (4) In every case we should endeavor to discover and treat the etiological factor.

The practical treatment adopted by Mitchell Bruce² is as follows: A large room, well ventilated, without draughts, to be kept at a temperature of 64° F.; no gas burning, but a steam kettle; light curtains to the bed, and warm but light bedclothing. The patient to wear flannel and a loose jacket, and to be propped up with a bed-rest and pillows.

Diet: Warm fluids in 5-ounce feedings every two hours. In the gouty the milk to be peptonized and diluted, and very hot lemon-water to be drunk quickly. The cough and the expectoration are to be promoted by occasionally moving the patient.

Medicinally, a calomel purge followed by a saline:

R.—Potassii citratis	. . . . .	gr. x.
Liquor. ammon. acetatis	. . . . .	f 3 iv.
Vin. ipecac.	. . . . .	℥x.
Aquæ chloroformi	. . . . .	f 3 iv.
Aquæ dest.	. . . . .	ad f 3 j.

Sig.—The dose to be taken every four hours.

In gouty subjects iodide of potassium, carbonate of ammonia, and bicarbonate of potassium may be added.

Locally, a fresh, large, and light crushed linseed poultice is to be applied every three or four hours, or a turpentine stupe. Cotton-wool is to be put on the chest in the interval. The liniments of camphor, soap, or turpentine may also be rubbed into the skin, followed by light, warm coverings.

For harassing cough a few drops of ammoniated tincture of opium or 5 grains of Dover's powder.

R.—Pulv. ipecac. et opii	. . . . .	gr. iij.
Pulv. scillæ	. . . . .	gr. j.
Pulv. ammoniac	. . . . .	gr. j.
Ft. pulv.		

¹ Medical Record, August 12; Journal of the American Medical Association, August 19.

² Loc. cit.

For persistent dyspnœa and lividity :

	1.	
R.—Sp. ætheris		℥ _{xxx} .
Sp. ammoniæ aromat.		℥ _{xxx} .
Tinct. aurantii amar.		℥ _{xx} .
Aquæ camphoræ		f℥ij.
Aquæ dest.		ad f℥j.
Sig.—To be taken when required.		
	2.	
R.—Strych. hydrochlor.		gr. $\frac{1}{30}$.
As a subcutaneous injection.		
	3.	
R.—Oxygen to inhale.		

Convalescence : As the patient improves the steam kettle and other nursing appliances may be dropped. A bitter tonic mixture with carbonate of ammonia will be substituted for the diaphoretic, and later on the following tonic :

R.—Acid nitrohydrochlor. dil.	℥ _x .
Strychninæ hydrochlor.	gr. $\frac{1}{30}$.
Syrup. aurantii	f℥j.
Aquæ dest.	ad f℥j.

Sig.—To be taken three times a day after meals.

The value of emetics : Albert Robin¹ treats bronchial infection by emetics, which he values above antiseptics. A dose of $7\frac{1}{2}$ grains of ipecachuanha powder in half-a-glass of water is to be repeated at intervals of one-quarter hour (for old people, with $\frac{1}{4}$ grain of tartar emetic), and followed by tepid water. Robin calls special attention to the reduction of temperature, which further contributes to the comfort invariably derived by the patient from the relief of the dyspnœa, and to the increase, sometimes almost twofold, in the degree of pulmonary ventilation. The after-treatment is conducted with small doses of ipecachuanha and other drugs. In the following prescription antimony is used as an expectorant, belladonna to dry the mucous surface, aconite to lessen the bronchial reflexes, and nux vomica to stimulate the fibres of Reissessen and lessen the bronchial dilatation :

R.—Antimonii oxidi	gr. xv.
Tr. aconiti radices	℥ _{xx} .
Tr. belladonnæ	℥ _x .
Tr. nucis vomicæ	℥ _x .
Syrup. ipecac.	f℥iv.
Syrupi	ad f℥v.

Sig.—One tablespoonful every hour until vomiting occurs.

The cases of bronchial infection described by Robin include, beside those dependent upon infective diseases, some of the common cases of heavy mucopurulent catarrh.

¹ International Clinics, 1898, vol. ii.

Coutts' success in the treatment of infantile bronchopneumonia by belladonna is confirmed by D. A. Hodghead's¹ experience in a series of thirty cases. Small doses are slightly sedative and narcotic; they raise the arterial tension and the tone of the heart by stimulating the cardiac lymphatic and depressing the inhibitory influence of the vagus. As a respiratory stimulant belladonna helps the diaphragmatic and the accessory muscles. By flushing the cutaneous circulation it relieves the pulmonary congestion. It also seems to increase the flow of urine and of bile. Of its efficacy in checking bronchial secretion there is not any doubt, and to this must be largely attributed the considerable reduction of mortality under its use (from 60 or 80 per cent. to 10 per cent.) reported by Hodghead. His practice has been to administer it in full doses every hour or every two hours until relief is obtained. In the case reported it was given in one or two-drop doses every half-hour.

Guaiacol carbonate and creosote carbonate are again recommended in bronchitis and pneumonia by R. Seiffert.² He refers to Chaumier's³ observations and to his own joint paper on "Duotal (guaiacol carbonate) and Creosotal in Phthisis" (Hölscher and Seiffert⁴); also to the results of Cassoute and Corgier.⁵

The method consists in the continuous administration of rather large doses of creosotal—"an almost certain protection against pneumonia by impregnation with creosote." Though absorbed slowly by the intestine it is rapidly eliminated. An hour after its absorption creosote can be demonstrated in the breath and in the urine.

The daily dose for adults is 10 grammes (2½ drachms) in emulsion or in hot sugared milk, and this may be divided into four doses. Up to one year of age, 4 to 15 grains; one year to four years, from 15 to 45 minims; four to six years, from 45 to 60 minims; six to ten years, from 60 to 75 minims. These doses can be increased without any danger. Their administration must be stopped gradually. The pyrexia of bronchitis is remarkably reduced, and even in advanced pneumonia creosotal is beneficial.

Chronic Bronchitis. The treatment of chronic bronchitis should begin at the subacute attack, for which F. H. Edgeworth⁶ suggests: (1) A sudorific; (2) potassium citrate or acetate (20 to 30 grains), with a small dose of antimony every three or four hours; (3) mustard leaf to the chest; (5) a caffeine pill (5 grains) at night, to overcome any

¹ Pediatrics, New York, September 1, 1899.

² Lancet, September 9, 1899.

³ Ibid., January 22, 1898.

⁴ Berlin. klinische Wochenschrift, 1891; Lancet, November 14, 1896, and April 2, 1898.

⁵ See Seiffert: "The Treatment of Acute Pulmonary Affections by Creosotal," Montpellier, 1899.

⁶ Bristol Medico-Chirurgical Journal, September.

bronchial spasm. The administration of indirect alkalies is to be kept up so long as expectoration is difficult.

In the chronic stage, if the secretion is easily raised, *ammonium chloride* in 20-grain doses should be taken every four hours, with spirits of chloroform and syrup. For a troublesome cough phosphate of codeine is an excellent remedy; $\frac{1}{4}$ to $\frac{1}{8}$ of a grain may be taken every four hours. We should select expectorants possessed of some astringent action, and not desiccating, as senega and ammonium carbonate are sometimes apt to be. Tincture of Virginian prune ($\frac{1}{2}$ to 1 drachm) is soothing, owing to traces of hydrocyanic acid, but not very astringent; tincture of hydrastis ($\frac{1}{2}$ to 1 drachm) may therefore be combined with it. *Euphorbia pilulifera* (10 to 30 minims) may, like stramonium and lobelia, set up nausea if given too freely; it is sometimes successful in asthma, but loses its effect after a while. In bronchitis it may be given in doses of 10 to 30 minims. *Yerba santa* (15 to 45 minims of the extract) is an Indian remedy often very effectual. It forms an almost clear solution with the help of an alkaline salt. Bronchial spasm is best treated by potassium iodide and caffeine.¹

Are the so-called "malarial bronchitis and pneumonia" truly specific or merely complicating? In discussing E. M. Du Paquier's paper at the Louisiana State Medical Society, May 16, 1899, Thayer referred to Laveran's views, that these forms of bronchitis and bronchopneumonia, just as the so-called "malarial" diarrhoeas, neuralgias, etc., are not specific, though in malaria pneumonia is apt to be protracted and grave. Two of Du Paquier's cases had presented organisms, but not during the period of respiratory complication.

Eosinophilous bronchitis (Hoffmann), a chronic and recurrent variety, with hyaline, slimy expectoration rich in eosinophilous cells, is regarded by Teichmann² as distinct from asthma, but might be at first mistaken for early tuberculosis.

Eosinophilous cells occur abundantly in bronchitis, bronchial asthma, and other affections without a corresponding eosinophilia of the blood. Are they formed in the respiratory tract, or are they, as contended by Ehrlich, emigrants from the blood? The views of Klein, of Teichmüller, and of Fuchs are discussed in the *Journal of the American Medical Association*, September, 1899. Fuchs traces their origin in a variety of situations, partly from leucocytes with neutrophile granules, partly from phagocytes charged with altered blood-cells, which are perhaps the source of the hæmoglobin and iron which they contain. Fever depresses the eosinophilia of the sputum, and the number is reduced in

¹ Braithwaite's Retrospect, vol. cxx.

² Deutsch. Arch. für klin. Med., 1899, lxiii., 414.

the pyrexial stages of phthisis. According to Teichmüller, they possess a decided protective action against tuberculosis. This view is partly shared by Fuchs, but he finds them present in the sputum of all apyrexial respiratory affections.

Plastic Bronchitis. Two interesting cases of this singular affection are contributed by Thomas Oliver.¹ It is not specially related to tubercular disease, and in no way associated with croupous pneumonia or with tracheal croup. The two types—acute and chronic—are difficult to

FIG. 1.



A bronchial cast from Dr. Oliver's case of plastic bronchitis. From adult male.

separate from each other, though cases vary in the abruptness and severity of the initial symptoms. The treatment is unsatisfactory. Nothing short of expulsion of the casts gives relief. Lime-water or lactic-acid sprays and inhalations and solutions of the alkaline carbonates are not reliable; but iodide of potassium, with or without expectorants, gives as good results as anything. Ewart recommends the cautious intratracheal injection of oil. Mild solvents, such as lime-water or trypsin, have also been suggested. To prevent recurrence Oliver can only recommend studying the general health, residing in a

¹ British Medical Journal, July 8, 1899.

dry, bracing atmosphere, living well, and taking ammoniated tincture of quinine, nux vomica, and cascarrilla, with or without cod-liver oil.

Chronic Primary Aspergillous Membranous Bronchitis is described by L. Devillers and L. Renon¹ for the first time. Primary aspergillosis itself had only once been recorded. The patient, a grain-sorter, dated since 1894 her cough and expectoration, the musty taste in the mouth, and the choky sensations. Since 1898 fits of dyspnoea and of whistling respiration, with spasms of cough, supervened, usually ending in the expulsion of 3 to 6 cm. of a greenish membrane containing the mycelium and the virulent spores of aspergillous fumigatus. The membrane was apparently derived from one large bronchus only. No amelioration resulted from iodine inhalations and arsenic internally.

Ether Bronchitis. Sydney Rumboll,² of Leeds, in 1500 cases of the administration of ether preceded by gas, has only met with one case of bronchitis, one of pneumonia, and four of slight bronchial irritation; but in 60 per cent. of his earlier cases and in 30 per cent. of the last 400 the salivary and bronchial secretions were considerably increased, though this was quickly relieved after the first or second act of vomiting. These 1500 cases included every variety of surgical operation and were not specially selected. Some had albumin, sugar, and cardiac disease. Rumboll believed that the case of bronchitis was due to the cold operating-room, and the pneumonia was attributed partly to septic infection.

Fatalities from the administration of ether are not usually connected with the larynx, but the *Lancet* (January 6, 1900) reports a case in which asphyxia occurred from oedema of the glottis—the breathing becoming after four minutes' administration shallow and rapid, at first with pallor, but then with deepening cyanosis and ultimate arrest. In the case reported by W. J. McCardie,³ spasmodic closure of the larynx occurred during the administration of ether preceded by nitrous oxide. The patient recovered slowly from the effects. Nothing could be found at the time of the spasm by digital examination of the pharynx. The patient was the subject of compensated mitral stenosis. Some of these patients are well-known to be unable to take ether with any safety.

THE TREATMENT OF EMPHYSEMA.

Harry Campbell⁴ describes the treatment of emphysema by exercising favoring expiration and preventing overaction of the inspiratory muscles.

¹ Presse Méd., November; Journal of the American Medical Association, December 30, 1899.

² British Medical Journal, February 10.

³ Ibid., January 20, 1900.

⁴ "Respiratory Exercises in the Treatment of Disease," London, 1898; and his paper in the British Medical Journal, October 28, 1899.

The fixation of the chest is due to a shortening of the inspiratory muscles, owing to their chronic overaction. This overaction is a result of the diminution in the pulmonary elasticity—a force which normally should operate against them.

The mechanical relief of emphysema has been attempted by two methods. Unaided respiratory exercises are of use in many conditions; but in some, particularly in emphysema, mechanical aid is desirable. The most efficient appliance hitherto devised is E. Hulse Willock's¹ respiratory jacket apparatus. Cords cross from either side of the jacket, to which they are attached in the posterior axillary line to the opposite sides in front, and they are here gathered up in a ring. There is a framework, consisting of a flat seat ($1 \times 3\frac{1}{2}$ feet) with an upright iron rod ($4\frac{1}{2}$ feet long) at each end. These two posts are steadied above by a crossbar. The upright on each side ends in a pulley, and over this a cord runs, at one end of which is a stirrup-shaped handle, at the other a hook. The patient has the jacket adjusted and sits down, or the seat may be placed under him in bed. The hook on the right side catches up the ring holding the left-hand cord, and *vice versa*. The handles are then grasped, a deep inspiration is taken, and at the same time the hands are raised above the head and the diaphragm relaxed; the jacket is then expanded by the chest. When inspiration has reached its maximum the arms are lowered and the handles forcibly drawn down. This causes the jacket to contract and compress the chest while a deep expiratory effort is being made. Thus when the arms are raised inspiration reaches its utmost capacity; when lowered the chest is compressed, and all the expiratory and extra-expiratory muscles exert their full influence.

The majority of cases treated were of emphysema and bronchitis. The experience was that at first the cough and expectoration were increased immediately after use, as well as rendered easier; and a patient will beg to use the apparatus more often than prescribed. The applicability of the treatment to phthisis is limited, owing to the possible contingency of hemorrhage, particularly when excavation has commenced.

Willock has obtained good results in cases of: 1. Emphysema, with or without bronchitis. 2. Bronchial asthma, either associated with emphysema, or, 3. Spasmodic bronchial asthma where there is no evident emphysema. 4. Dilatation of the right heart, the result of impeded flow in the lung tissue. 5. A limited number of cases of phthisis. 6. Badly developed chest independent of a diseased state of the lungs.

The apparatus is also useful for teaching respiratory exercises.

Ewart's automatic respiratory jacket, of which a full description will be published, is a much simpler device, which influences both inspiration

¹ British Medical Journal, November 4, 1899.

and expiration. Its curative action is copied from the methods of the disease itself—slow and gradual, but continuous.

Subcutaneous Emphysema. Escape of air from ruptured alveoli into the areolar tissue of the chest and of the neck as a result of a moderate bronchitic cough, came under the observation of John Gordon¹ in the case of a boy, aged four and a half years. Besides pyrexia (103° F.), quick pulse (160), and respirations (72), considerable distress and tossing about resulted; but the worst symptoms disappeared after three days and the extravasated air within ten days.

The same causation probably obtained in Ewart and Roderick's² case, where emphysema developed during a violent fit of coughing set up by changing the tracheotomy tube. Attention is called to the two varieties capable of arising in cases of tracheotomy—the early, which is traumatic, and the late, which is due to ruptured vesicles. The patient died apparently suffocated by the amount of air infiltrated into the mediastinum, and perhaps owing to mechanical interference with the heart's action. The unsatisfactory treatment of this condition is discussed.

THE TRACHEA AND THE BRONCHI.

Syphilitic ulceration of the trachea is, according to Walker Downie,³ less rare than sometimes supposed, and rather more frequent in the congenital form, though apt to be overlooked at an early and remediable stage, its various symptoms suggesting laryngismus, chronic laryngitis, phthisis, aneurism, mediastinal tumor, or even angina pectoris. Its dangers are obvious: during the active stage necrosis of cartilage, hemorrhage, or even perforation into neighboring structures and the aorta, and after healing, contraction of the lumen of the trachea, with sometimes stenosis of one or both bronchi which tracheotomy cannot remedy. A cough of "wheezy" or "croupy" but not "brassy" character, and a blood-stained, puriform mucous expectoration are suspicious circumstances.

Guaiacol vapor baths for bronchiectasis: A case which had been treated ineffectually by creosote vapor baths is reported by Hearn Parry⁴ to have improved rapidly when guaiacol vapor was substituted. The baths were given daily and increased from ten to sixty minutes. The expectoration decreased considerably after five weeks—that during the bath from 25 ounces to 11½ ounces; that during the rest of the day from 20½ ounces to 8 ounces.

Stanley Dodgson's case of fetid expectoration with occasional hæmoptysis, dating from an extraction of teeth under ether seven months previously, was cured in two months by creosote inhalations given on alter-

¹ Lancet, December 9, 1899.

² Ibid., December 30, 1899.

³ British Medical Journal, October 14, 1899.

⁴ Lancet, July 22, 1899.

nate days.¹ The expectoration had amounted to 20 ounces daily, and the temperature had been 102° F.

For the removal of a tracheotomy tube from the right bronchus, A. Coolidge² introduced through the large tracheal wound a urethroscope with stilette. The stilette having been withdrawn, the speculum was pushed to within an inch of the bifurcation, when the tube was seen and removed with an alligator forceps, while respiration was easily carried out through the speculum.

The case reported by C. W. Buckley,³ of a man, aged sixty-one years, with calcareous aortic valves, who died struggling for breath after inhaling a plug of tobacco into the left bronchus, shows that death may occur from collateral causes when one lung is suddenly disabled, although plenty of available lung and a free passage into it may persist. The kidneys were sound, but we are reminded by this case of the fatal pulmonary congestion which sometimes overtakes the subjects of Bright's disease. The heart was healthy, but empty and flaccid, the abdominal viscera congested, the obstructed left lung greatly congested, the right lung also, though less deeply congested.

THE FUNCTIONAL AND REFLEX AFFECTIONS OF RESPIRATION.

The Causes of Cough in Children, with Special Reference to Practical Treatment. An eminently useful inquiry has been undertaken by J. Porter Parkinson,⁴ who tabulated 700 consecutive cases in children, aged from six months to twelve years, in which cough was the chief symptom. The results are as follows :

	Cases.
Acute or chronic enlargement of the tonsils	170
Varying degrees of bronchitis	143
Constipation	69
Gastro-enteritis	58
Adenoids well marked	58
Pharyngitis	51
Worms, chiefly thread worms	30
Tuberculosis of lungs	29
Rickets	23
Whooping-cough	23
Acute pneumonia	18
Bronchopneumonia	11
Simple dry pleurisy	8
Laryngismus stridulus	3
Laryngitis	2
Mixed cases, pleural effusions, or adhesions, lymphadenoma, carious teeth, etc.	12

¹ British Medical Journal, February 3, 1900.

² New York Medical Journal, September 30; Lancet, November 11, 1899.

³ British Medical Journal, November 4.

⁴ Ibid., August 19, 1899.

Of this aggregate the proportion

Due to chest disease was	31 per cent.
“ throat disease	40 “
“ gastro-intestinal disease	23 “
“ other causes	6 “

EXTRAPULMONARY COUGH. A diagnosis of the cause of a cough is essential to its cure. Abrams¹ reviews the means to this important end. Irritation may occur from the skin, ear, nose, nasopharynx, tonsils, uvula, laryngeal tonsil, teeth, œsophagus, liver, spleen, pleura, etc. He is also a believer in the objective reality of the stomach cough.

Somewhat different from the stomach cough is the pyrosis cough set up by the reflux of irritating fluid, usually acid, as far as the intra-arytenoid space, described by Pechkranz.² This cough is exceedingly severe. It is a common symptom not usually described.

Reflex cough has also been studied in its varieties and characteristics by George L. Richards,³ with special reference to the nerve paths of conduction.

The causation of night-terrors, which has been largely attributed to various neuroses, including cortical epilepsy, hysteria, etc., is brought down, with much show of reason, to the simple basis of dyspnœa in E. Graham Little's⁴ able paper, to which a bibliography is appended. His conclusions only can be quoted :

“1. Night-terrors are in the great majority of cases caused by disorders productive of moderate but prolonged dyspnœa.

“2. A preponderating number of cases are found in rheumatic subjects with early heart disease.

“3. A considerable proportion of cases are due to obstruction of nasal cavities and fauces.

“4. Digestive disturbances do not play the important part in causation that is often assigned to them.

“5. The evidence for their causal connection with epilepsy or allied neuroses is scanty.

“6. The attacks occur in the subconscious stage of early sleep, and are confined to young children under puberty.”

Tachypnœa. This symptom, occurring in an upholstress, aged eighteen years, not hysterical, but subject to dyspepsia and bronchitis, was attributed by Ewart⁵ to an upward distention of the stomach, which was asso-

¹ Medicine, Detroit and Chicago, August ; Journal of the American Medical Association, August 19.

² Wiener medicinische Wochenschrift, April 8, 1899 ; British Medical Journal, Ep., July 8.

³ Medical Record, August 5, 1899.

⁴ British Medical Journal, August 19, 1899.

⁵ Ibid., February 10, 1899.

ciated with considerable dental decay, pseudorheumatic pains in the joints, and tapeworm. This causation probably obtains in many cases regarded as mere neurosis.

Intermittent tachypnœa (66 or more per minute), lasting for hours and alternating with hours of very slow breathing, was one of the symptoms in a case of doubtful thrombosis of the superior longitudinal sinus observed by Fred. J. Smith.¹

Charles R. Elgood's² case of uræmic breathlessness differed from the usual form of Cheyne-Stokes respiration in that the cycle was accompanied by suffocating distress during the stertorous periods.

The Treatment of Hiccough. In Arthur Powell's³ instructive case hiccough began while the patient (male, aged thirty-five years) was still semi-conscious from chloroform after lateral lithotomy. For twenty-five days it continued violently at intervals of a few seconds and ceased abruptly soon after a casual dose of chloral. Large doses of morphine only prolonged the intervals; antispasmodics, narcotics, emetics, purgatives, counter-irritation to the epigastrium and over the phrenic nerves in the neck, etc., proved useless, and the patient became greatly emaciated. No cause could be detected for the onset or the cessation.

Laura M. Plantz⁴ reports that *gargling* has been found a prompt and efficient cure in every case where it was tried.

H. E. Belcher⁵ recommends a treatment which he, as well as Car-
nelley, has found effectual in obstinate hiccough:

R.—Extract. ergotæ fl.	. . . . .	fʒ ij.
Sodii bicarb.	. . . . .	ʒj.
Aquæ	. . . . .	ad fʒ iv.

Ft. mist. Sig.—Two table spoonfuls to be taken at intervals of half an hour.

The Treatment of Whooping-cough. The serum treatment is referred to by J. J. Walsh.⁶ In two children injected with serum from individuals who had had whooping-cough, the disease was abated, and in others the paroxysms lessened in number and severity.

Gilbert,⁷ noticing an improvement of the whooping in a child injected with antitoxin for diphtheria, has adopted the injections as a treatment for whooping-cough, with good results. The quantity injected is from 2 to 5 c.c. and the frequency every two or three days. Gilbert cannot tell us whether the horse's serum or the antitoxin is the chief agent of relief.⁸

¹ British Medical Journal, September 30, 1899.

² Ibid.

³ Ibid.

⁴ New York Medical Journal, July 22, 1899.

⁵ British Medical Journal, June 3, 1899.

⁶ Medical News, March 3.

⁷ Rev. Med. de la Suisse Rom., June 20, 1899.

⁸ Philadelphia Medical Journal, October 7.

Euchinin, $\text{CO} \begin{smallmatrix} \diagup \text{OC}_2\text{H}_5 \\ \diagdown \text{OC}_{20}\text{H}_{23}\text{N}_2\text{O} \end{smallmatrix}$, is a newly introduced drug, a derivative of quinine, almost tasteless, crystalline, freely soluble in ether, chloroform, or alcohol, but less easily in water, partakes of the antipyretic and antimalarial efficacy of quinine, but causes neither headache nor tinnitus. Cassel¹ speaks well of it in whooping-cough, and administers it in sweetened water up to 3 grains, to 7 grains, or even 15 grains in larger children; but in pyrexial or bronchopneumonic cases it is powerless. Noorden has also tried this remedy in fifteen cases, with failure in three cases only.

A. Rose,² who refers to the work of Bergeon, Rosenbach and others, and to the increased facility afforded by the *Système Sterné* for the *rectal douche of carbonic acid*, has cured some cases entirely in ten days; but other cases have shown no amelioration. Ephraim has had remarkable results in asthma, and has seen much benefit in chlorosis and phthisis.

Rectal injections of CO_2 have also been tried by N. R. Norton³ for two years. Of a total of 150 patients, 143 were benefited. The gas obtained from soda-water manufactories was not so efficacious as that evolved from tartaric acid and sodium bicarbonate; indeed, in twenty cases it seemed to have no effect upon the whooping-cough.

Antitussin contains 5 parts of difluordiphenyl, 10 parts of vaseline and 85 parts of lanolin. A piece of this ointment as large as a walnut is to be well rubbed into the chest, neck, and back after cleaning the skin with warm soapsuds. Max Heim⁴ finds it of use not only in whooping-cough (16 cases), but also in catarrh of the throat and pharynx.⁵

Early treatment may avert the convulsive stage, but the attacks themselves are quickly mitigated and may be suppressed within a fortnight.

Bromoform has not fulfilled the promise held out at first, though some French authorities still recommend it (2 to 4 drops, three times a day, for an infant, and not more than 70 drops in one day for an adult).

Charles G. Kerley,⁶ after trying many drugs, expresses his belief in sedatives and open air. Quinine in large doses is beneficial, but difficult to administer. Most drugs are useless, even bromoform and belladonna. The most useful treatment is a mixture of bromide and antipyrine, on the scale of 1 grain of bromide and 2 grains of antipyrine for infants one year old; 2 grains of bromide and 3 grains of antipyrine for the second year, and so progressively onward.

¹ Therap. Monats., April, 1899; British Medical Journal, Ep., June 24.

² New York Medical Journal, January 6 and 13.

³ Medical News, March 3, 1900.

⁴ Berliner klinische Wochenschrift, 1899, No. 50.

⁵ Philadelphia Medical Journal, March 17.

⁶ Medical News, March 3, 1900.

Berg¹ believes in the bromides for the convulsive element and in perchloride of mercury for the tenacious throat secretions and membranes ($\frac{1}{60}$ of a grain every three hours until diarrhœa occurs, then to be intermitted). Under this treatment severe bronchitis or pneumonia are rare.

G. M. Swift² keeps a 25 per cent. solution of formalin in an open vessel in the room. In some cases the mediastinal glands are enlarged, and they may be answerable for the paroxysms; open air is then the remedy.

M. P. Creel³ recommends, in addition to ipecachuanha, belladonna, sodium bromide, etc., a formalin lamp (Schering), to burn a pastille every three or four hours. With these measures and proper hygiene he has had good results in 100 cases; 75 recovered in ten days.

The principles of treatment set forth in F. J. Taylor's⁴ paper include: (1) Hygienic measures, isolation, disinfection, purity of atmosphere, warmth of clothing, and supporting food; (2) palliative treatment by antipyrine, belladonna, bromides, and by the inhalation of formaldehyde vapor to relieve the paroxysms, and of codeine, tartar emetic, ipecachuanha, and squills for the catarrh; (3) a tonic treatment by iron, arsenic, and strychnine during convalescence.

Illoway⁵ believes that the incubation is longer than generally suspected, and may be recognized prior to any pyrexia or catarrh by a pathognomonic hacking cough. A short incubation foretells a milder and shorter illness, the worst cases having a longer incubation because of greater resistance of the system.

Paralysis as a complication may be due to toxæmia or strain. E. Schreiber's⁶ case gradually recovered from paralysis of the legs and arms, of the right side of the face, and of speech, which had been preceded by recurring convulsions, symptoms probably due to meningeal hemorrhage. P. Horven⁷ gives a careful review of the various paralysees incident to pertussis, which in 80 per cent. (37 out of 46 cases) are cerebral, either of the comatose or of the hemiplegic type. More rarely the paralysis is of bulbar, spinal, or peripheral type.

Leucocytosis, described by Frolich and Meunier, has also been recognized by de Amicis and Pacchioni.⁸ The blood-counts averaged 17,943 leucocytes in a cubic centimetre, lymphocytes predominating in the early stages, lympholeucocytes (large mononuclear) in the third stage. So large an excess is not found in any other respiratory disease.⁹

¹ Medical News, March 3.

² Ibid.

³ Medical Review, St. Louis, Mo.; Journal of the American Medical Association, June 3.

⁴ Gynecology and Pediatrics, Boston, July; Journal of the American Medical Association, August 5.

⁵ Pediatrics, January 15, 1899.

⁶ Arch. für Kinderheilk., Band xxvi., 1899.

⁷ Thèse de Paris, 1899.

⁸ Clinica Medica, 1899, p. 51.

⁹ Philadelphia Medical Journal, March 10.

Asthma and its Treatment. W. Blair Bell¹ argues that asthma is not a disease, but a symptom due to *direct* causes in the lungs and to *indirect* causes. To the first group belong (1) mechanical and toxic irritations from without; (2) mechanical and toxic irritations from within (gout, rheumatism, Bright's disease, etc.), and (3) morbid pulmonary states. The second group includes various irritations: (1) Gastric, (2) aural and nasopharyngeal, (3) cardiac, and (4) central (cerebral or sensorial). Gout is very frequently a second cause in these complex cases.

His treatment is based upon a view that asthma is due to an active pulmonary vasodilatation, caused by a direct or reflex stimulation of the vagus sufficient to overcome the vasoconstrictors. The resulting vasoturgescence obstructs the bronchioles, as urged by Sir A. Clarke, Weber, Störch and others. *Ergot* in large doses (1 to 2 drachms every half-hour until relief is obtained, but not to exceed a total of 1 ounce) is most efficacious. The antispasmodics (chloroform and ether) reduce the spasm of the vasodilators, while poultices, amyl nitrite, nitroglycerin, and the like dilate the superficial vessels, emptying the deeper vessels and calling into action the vasoconstrictors of the lung.

Of all the causes of asthma, Hitz² regards an irritation of the nasal mucosa as the most common. The immediate relief from a 10 per cent. cocaine application made at the point of abnormal contact between the tumor or soft swelling and the septum (usually at the back of its mid-turbinate region) is diagnostic and points to the line of surgical treatment. In this connection William Armstrong³ finds that a gouty diathesis often aggravates both the neurosis and the local lesions.

H. L. Swain⁴ enters fully into the clinical bearings of nasal disease upon asthma. F. H. Bosworth,⁵ who regards asthma as a vasomotor paresis rather than a muscular spasm, believes that an ethmoiditis is at the root of the nasal trouble. Fletcher Ingals, of Chicago, recommends a spray containing 3 per cent. cocaine and 5 per cent. sodium nitrite.

DYSPEPTIC ASTHMA. Landi⁶ dwells upon the influence of dyspepsia often seen in children of neurotic inheritance. This is evidenced by the furred tongue, foul breath, nausea, and vomiting. Treatment should be directed accordingly. The exhibition of purgatives or emetics gives prompt and immediate relief.

The allied conditions of autotoxic dyspnoea are, according to H. Huchard,⁷ symptoms of alimentary intoxication. The dyspnoea may be

¹ Edinburgh Medical Journal, October, 1899.

² Medical Standard and American Practitioner, Chicago, August; Journal of the American Medical Association, August 19.

³ British Medical Journal, June 3, 1899.

⁴ Philadelphia Medical Journal, June 3, 1899.

⁵ Ibid.

⁶ Clinica Mod., An. v., No. 24; British Medical Journal, November 11, 1899.

⁷ American Journal of the Medical Sciences, November, 1899.

due to uræmia, but generally precedes that stage, and is then attributable to vasoconstriction resulting from meat diet, in association with arterio-sclerosis and cardiac insufficiency, both of which indicate potassium iodide. An exclusive milk diet will dispose of this symptom and remove the intense pallor.

As insisted by Blair, the so-called "cardiac asthma" is not asthma at all, but cardiac distress from unmanageable pulmonary congestion.

Two cases of bronchial asthma were treated successfully by Bruck¹ with ether subcutaneously and internally. In one case five syringefuls were injected; in another case twenty drops were given every half-hour.

F. Riegel's² experience is a prompt relief of the dyspnœa and distention by an early subcutaneous injection of 0.5 to 1 mg. of atropine. Few cases have failed to respond to this treatment.

Jackson's inhaling powder for asthma has the following composition :

R.—Pulv. pottassi nitratis	ʒiv to ʒvi.
Pulv. stramonii	gr. lxxv.
Pulv. lobeliæ	gr. xc.
Pulv. belladonnæ	gr. xlv.
Pulv. grindeliæ	gr. xc.
Pulv. hydrastis canad.	gr. xv.—M.

Sig.—One heaped teaspoonful to be burned in a small, closed room or tent and the fumes inhaled.

He has found useful the following mixture :

R.—Sodii iodidi	gr. ij.
Sodii bromidi	gr. ij.
Ext. euphorbiæ pil. fl.	℥iij.
Tr. lobeliæ æther.	℥iij.
Nitroglycerin	ʒ ¹ / ₁₀ grain.
Aquæ	ad f ʒss.

Sig.—One tablespoonful as a dose.

George W. Jack³ enters into the all-important question of the hygiene of the asthmatic: (1) As regards nutrition, Leube's progressive diet is recommended, and stress is laid upon *abundance* as well as variety; (2) hydrotherapy, by cold sponging and friction; (3) sunlight; (4) altitude, and (5) regular habits are also indicated. Alcohol and tobacco are to be shunned and malaria avoided; hence the value of a residence in cities.

ASTHMA SEXUALE. F. Graham Crookshank⁴ has had experience bearing out Peyer's views as to the etiological influence of genito-urinary catarrhs, masturbation, and perversion in the absence of bronchial, cardiac, gastro-intestinal, or nasal excitations. Even in "asthmatic in-

¹ Memorab., March 13; Medical Record, June 10.

² Deutsche medicinische Wochenschrift, October 12.

³ Buffalo Medical Journal, January; Journal of the American Medical Association, January 13, 1900.

⁴ Edinburgh Medical Journal, June.

sanity" there is often a sexual nismus. Physiological relations are known to exist both between the nasal passages and the genital organs and between the nasal passages and the bronchi.

The Treatment of Hay Fever. The treatment of hay fever as conceived by B. Douglass¹ includes that of the *cause* and of the *attack*. 1. The irritation from pollen is to be guarded against by change of locality and by respirators, and that from any autotoxic irritants possibly excreted at the nose, by stimulating other excretory channels; vasomotor defects should be treated by quinine, digitalis, cold baths, or sponging, the spinal douche, etc.; the uric-acid diathesis by suitable remedies and diet; and neurasthenic conditions by exercise, rest, and tonics. 2. For the attack itself: *locally*, a warm, weak, saline nasal douche is a good cleansing agent after a 1 per cent. cocaine spray. The nose may then be treated cautiously with a 4 to 6 per cent. cocaine solution, nitrate of silver as a mild cautery, phenol camphor, mild menthol applications, or Sir Andrew Clark's solution: corrosive sublimate, 1 grain; hydrochlorate of quinine, 1 drachm; glycerole of carbolic acid, 1 ounce.

The constitutional treatment consists of a careful administration of acetanilid, and of full doses of quinine and digitalis to tone up the vessels. *Dried suprarenal extract* is almost a specific; it may be used locally as a spray, but it is more efficacious internally.

Müller,² of Vienna, who regards hay fever as closely related to gastrointestinal disturbance, and finds it very prevalent among neuropathic patients from England and the United States, relies upon constitutional treatment, including alkaline mineral waters, massage, etc. Locally, a solution of silver-nitrate is brushed over the nasal cavities, and after irrigation with seven or eight litres of water the following application is used:

R.—Menthol,									
Resorcin	.	.	.	.	.	.	.	āā	gr. xl.
Alcohol	.	.	.	.	.	.	.	ʒ iijss.	

The eye symptoms—"itching and burning, as if from heated sand"—are found by John Hern³ to be most intractable except by a month's sea voyage. Asthma occurs with and in proportion to any coexisting nasal obstruction. A 2 per cent. cocaine application will procure two or three hours' sleep; but, as pointed out by Devereux Marshall,⁴ there is always danger of the cocaine habit being acquired.

ACUTE CORYZA. F. H. Millener⁵ recommends an aqueous solution

¹ New York Medical Journal, September 2, 1899.

² Journal of the American Medical Association, March 17, p. 671.

³ British Medical Journal, September 23, 1899.

⁴ Ibid.

⁵ Buffalo Medical Journal, March.

of the suprarenal capsule (20 grains in $\frac{1}{2}$ ounce of water, filtered through cotton).

CEREBRO-SPINAL RHINORRHOEA is a kindred subject. It was first described by St. Clair Thomson in a striking instance, and studied by him in the records of twenty other cases which had been reported under various titles in the literature. St. Clair Thomson has drawn attention to its possible relation to the "hydrocephalus of adults" described by Continental writers. The diagnosis depends upon the characters of the fluid—clear, tasteless, odorless, free from albumin and mucin, and reducing Fehling's solution—which identify it with the subarachnoid fluid.¹ Of the series of 21 cases 17 exhibited cerebral symptoms and 8 cases retinal changes.

W. Freudenthal² reports a case of cerebro-spinal rhinorrhœa in which the discharge afforded relief to the severe pain which usually preceded it. The patient, aged fifty years, suffered from the dripping by night as well as by day. This constancy is diagnostic, for in ordinary nasal hydrorrhœa the flow stops at night.³ It was suggested by Scheppegrell that the flow was probably determined by the pressure of a tumor near the hypophysis cerebri.

DISEASES OF THE PLEURA.

The Diagnosis of Pleural Friction. Albert Abrams' method calls to aid during auscultation movements of the thorax more or less independent of the ordinary respiratory movement: (1) *In the arm manœuvre* the extended arm is raised to the side of the head. (2) *In the decubitus manœuvre* the patient lies on the affected side for one or two minutes and then rises quickly while holding the breath, when friction would be intensified, owing to closer pleural contact in a collapsed thorax. (3) *In the intercostal-pressure manœuvre* the buttoned rod of the phonendoscope, fitted into an ordinary chest-piece, is pressed firmly into the intercostal space.

The Pain of Diaphragmatic Pleurisy. The tender "bouton diaphragmatique" of Guéneau de Mussy is found at the intersection of the parasternal line and a line drawn along the tenth rib. Zuelzer⁴ finds other tender points: (1) Along the insertion of the diaphragm and (2) in the posterior triangle of the neck, where the phrenic nerve lies on the scaleni. The symptoms are: (1) Diffused violent pain, (2) suppres-

¹ British Medical Journal, September 23, 1899.

² Medical News, February 3, 1900.

³ New York Medical Journal, March 31.

⁴ Münchener medicinische Wochenschrift, November 22, 1898; New York Medical Journal, June 3, 1899.

sion of the movements of the hypochondrium, (3) absence of the usual physical signs of pleurisy, with diminution of breath-sounds, (4) occasionally pain on swallowing, and, lastly, (5) hiccough may be present.

Xiphoid Rheumatism. The diagnosis is made by Hirtz and Roustan¹ by the mechanical dyspnoea, epigastric pain, and limitation of respiration to which it gives rise. They recommend blistering locally and the salicylates internally.

Pleural Effusion. Right pleural effusion occurs more frequently than left effusion in cases of cardiac enlargement. Gianni² suggests that the arch of the azygos vein, situated above the root of the right lung, is apt to be dragged and compressed against the latter by the enlarging heart.³

A case of communicating pleural and peritoneal effusion suggests to Alex. James⁴ a possible potency of the "hiatus diaphragmaticus" of the French writers—a spot where the upper and posterior part of the kidneys is practically in contact with the inferior cul-de-sac of the pleura. The manometric pressure was the same in both cavities. The respiratory oscillations were sometimes greater in the thoracic, sometimes greater in the abdominal tube, but they gave invariably an expiratory rise in the thoracic as well as in the abdominal tube, as though a wider communication existed than that through the diaphragmatic lymphatics demonstrated by Ludwig. The primary hemorrhagic effusions into the pleura and peritoneum, reported by Cheesman and Ely,⁵ the polymorphous pleurisies described by Galliard,⁶ in which the "typhoid pleurisies" are discussed by various writers, can only be mentioned in passing.

Pleural Tuberculosis without Pulmonary Implication. This is found by Eugene Hodenpyl,⁷ in a series of 131 autopsies on adults, to be of frequent occurrence, and the tubercles are prone to become fibrous; but pleural tubercles may set up a generalized tubercular exudative pleurisy or complicate a simple acute exudative pleurisy.

THE DAMAGING AFTER-RESULTS OF PLEURISY are now better watched for and treated. When called to any case of pleurisy we should ask ourselves: Is this patient suffering from simple rheumatic or from tubercular pleurisy, or from an acute pleuropneumonia? The patient's future may depend upon a correct answer being made. If tubercular, was the pleurisy primary or secondary to lung disease? Often enough the pleurisy runs on to pulmonary tuberculosis, but it

¹ Journ. de Med., April 10, 1899; British Medical Journal, Ep., July 29.

² Il Policlinico, May 1, 1899.

³ British Medical Journal, Ep., July 1.

⁴ Ibid., July 29

⁵ American Journal of the Medical Sciences, August, 1899, cxviii., p. 162; Lancet, October 14.

⁶ Soc. Méd des Hôp., Paris, November 24; Lancet, December 30.

⁷ Med. Record, June 24, 1899.

may long antedate the pulmonary invasion. This note of warning should not be missed, but lead to immediate action. Whether the lung be infected from the pleura or from a separate source, owing to limitation of breathing by a preceding pleurisy, the practical course remains the same—to obtain for the patient the advantages of open-air life and of free ventilation of the threatened lung with pure air.

The Diagnosis, Prognosis, and Treatment of Pleuritic Effusions.¹

I. THE DIAGNOSIS. In determining the extent of pleural effusion we are guided by the heart, by the skodaic resonance (both in front and behind), and by the amount of dulness. Usually the fluid displaces the heart toward the opposite side. Occasionally the heart is hardly moved. Rarely the heart may be displaced toward the side of the effusion, probably because while the effusion has been partly reabsorbed expansion of the compressed lung has not taken place. This should be borne in mind.

In considerable effusion rising to the summit of the pleura the skodaic resonance is obliterated at the sternal end of the clavicle and along the manubrium, but usually persists at the side of the first, second, and third dorsal spines. Sometimes the “boxy” resonance of the bronchial tubes is obtained both in front and behind. This shows that there is enough fluid to compress the lung from below, but not sufficient to interpose a layer between the parietes and the front of the upper lobe.

Percussion of the Back. Damoiseau showed that the upper line of dulness is not, as often depicted, horizontal, but strongly curved, with its convexity upward. This shape of the dulness agrees with the fact, which I have recently pointed out, that the spines of the vertebræ in unilateral effusion are resonant on percussion. This convex dulness has *two degrees*. Strictly parallel with the upper line of partial dulness is the line of absolute dulness, situated about one and a half inch lower. Between these two lines the respiratory sounds are diminished, and the voice is invariably altered and twangy, and often actually ægophonic. At the line of absolute dulness vocal vibration and vocal fremitus are suppressed, and the ægophony present above may cease; but ægophony is apt to vary with the amount of the fluid, the extent of pulmonary compression, and the relative situation of bronchi, etc.

II. THE PROGNOSIS has an immediate aspect and a remote, viz., as to reabsorption and formation of adhesions and as to any danger of ulterior disease of the visceral pleura and lung. This is largely a question whether the pleurisy is simple “rheumatic,” pleuropneumonic, or tubercular. The chief cause of extensive adhesions is pleuropneumonia, the least frequent is rheumatic pleurisy with effusion.

III. THE TREATMENT. Shall we aspirate? Recently the wisdom of

¹ From “Notes on Consultations.” The Polyclinic, London, October, 1899.

early interference has again been questioned. It has even been suggested that in pulmonary phthisis effusion may be beneficial (1) by keeping the lung at rest; (2) by restricting the air currents in and so preventing the dissemination of tubercle; and (3) by keeping the lung bathed in a supposed antitoxic serum. These suggestions are difficult to reconcile with our modern principle of free ventilation of the lung.

Not long ago, in the case of a boy, I obtained within three or four days, by a blister and diuretics, the disappearance of an effusion which had filled the chest and obliterated the anterior skodaic resonance. Although so rapid a recovery is exceptional, the non-operative treatment has of late proved successful in my hands in several cases, and it may safely be tried as a preliminary to aspiration. Blistering is probably a considerable help; but, even without it, the combination of diaphoretics, including *sodium salicylate*, and of diuretics, including *digitalis*, with a moderately dry diet, is likely to prove efficacious.

The Treatment by Aspiration, and the After-treatment. When medicinal treatment fails, aspiration is nearly always successful. After aspiration some dulness may, even for a considerable time, remain at the base, causing much uncertainty as to the continued presence of fluid, and even suggesting repeated aspiration. This doubt and delay are largely avoidable if suitable "after-treatment" is adopted.

Pleuritic Laziness of Breathing and its Remedy. On early inspection the affected side is seen hardly to move, while the movements of the other side are exaggerated. Another inspection at the end of the attack has for its object to determine the result of the attack, the degree of mobility of the lung, and, if possible, the presence or absence of adhesions. I have now multiplied these inspections, and make it a rule to test the breathing at frequent intervals and quite early by careful inspection and bimanual pressure.

In a patient who had recovered from the acute stage the base had remained in a stationary condition of dulness, diminished movement and breathing, and modified voice-sounds. In the space of two minutes, thanks to a simple device, the base was made resonant, the respiratory movements active, and the breath-sounds audible. The method was simply to make the patient lie on his sound side and breathe deeply, and to assist his expirations by well-timed compressions of the base affected. Without this intervention things might have remained unchanged for many more days.

Clearly, then, an indication had been neglected. I believe that in many cases aspirated, and in others, there is a laziness of breathing, a loss of the respiratory habit in the muscles and diaphragm, and that assistance in respiratory exercises should be employed as soon as the fluid has been considerably reduced by treatment.

The Disposal of the Residual Fluid. On the other hand, the manipulation described is just that which might effectually drive the fluid, had it been present, from its basic pool into other parts of the chest, where it might spread without setting up dulness. I have still some doubt on this point, but with regard to the practical treatment I have no doubt. One distinction between pleural and pericardial effusions is the permanence of the former if left alone, while some pericardial effusions, as I have shown, may be so rapidly reabsorbed that they pass unrecognized by physical examination and their presence unsuspected. In the pericardium the fluid is never at rest, the membrane is constantly washed by it, and the stomata kept clear. In the pleura almost absolute rest prevails, and the stomata and lymph capillaries are likely to become clogged by sedimentary fibrin. In the absence of cancer or excavation of the lung free manipulation of the chest should be applied as soon as possible after aspiration. This can be accomplished both by thoracic compression and by pressure applied upward from the abdomen; in both cases so timed as to suit the breathing.

We must then reconsider the principles. The *after-treatment* has usually been to keep patients in bed so long as dulness has persisted at the base. As they begin to stir and sit up in bed they ventilate their bases, which ultimately become resonant. A quicker method is now proposed: (1) The immediate adoption after aspiration of the postural treatment; (2) the application at stated intervals of artificial forced expiration; (3) gentle exercise out of bed after defervescence; and (4) the sound side of the chest, when the patient first gets up, might be *strapped*, to throw the full stress of breathing during exercise upon the disused lung.

Strapping has often been used at the early stage to allay pain by immobilizing the side affected; but this proceeding is open to the objection that it may promote adhesion, since the painful stage in question is the time when fibrin is being thrown out, and we may wisely prefer other means of relieving the pain to one which might lead to adhesion and to a diminished respiratory function.

Empyema. INTERLOBAR ENCYSTED EMPYEMA. This is often a clinical puzzle. Its signs¹ simulate at first (for eight to ten days) those of pneumonia; it may begin as a pneumonia, but is usually primary and rarely tuberculous. The displacement of the heart, coupled with the limited mid-dorsal dulness, are, when present, valuable aids to diagnosis. At a later date the symptoms may be in part those of phthisis. Thus there may be considerable hæmoptysis from the formation of an interlobar vomica, and fetid pus may be expectorated. A spontaneous cure may result, but early diagnosis and surgical relief are to be desired.

¹ Dieulafoy. Sem. Med., November; Journal of the American Medical Association, December 2.

TYPHOID PLEURISY. The occasional insidious pleurisy or empyema of typhoid, beginning without rigor, usually in the later stages, has a more favorable prognosis than the tubercular empyemata.¹ This form is of practical interest, as more cases are recognized of *typhoid infection without intestinal lesions*. The latest of these is reported by Lartigan,² in a man who died of septicæmia, and from whose liver, heart, spleen, lung, and gall-bladder a short, thick bacillus was isolated, which grew like the typhoid bacillus and gave Widal's reaction.

Chiari and Kraus have grouped cases of enteric as: (1) With characteristic lesions; (2) atypical cases with post-mortem lesions; (3) without macroscopical lesions, but with the typhoid bacillus in the organs; (4) without recognizable anatomical or bacteriological evidence, but responding positively to the Widal reaction. Thus it is conceivable that a pleurisy might be the most prominent feature of an atypical case.

PULSATING EMPYEMA is an affection decidedly rare and usually left-sided. A case, occurring in a boy, is reported by J. L. Archambault. It is of interest to note that the young patient had completely re-expanded his chest six years after the operation, and interesting comments upon this affection are made by the *Lancet*, March 10, 1900.

THE TREATMENT OF EMPYEMA. The discussion at Portsmouth showed that divergencies persist on important points of practice. Betham Robinson rather recommended resection and irrigation; Tubby was opposed to the latter as dangerous.³

Another kind of valvular drainage-tube is proposed by W. Williams.⁴ The valve in this case consists of a flattened piece of thin rubber tube placed at the end of a long empyema tube and immersed in a bottle of 2 per cent. carbolic acid, to be worn in the pocket. We commented last year upon the drawbacks of most of these ingenious appliances.

In a "Sketch of an Ideal Treatment,"⁵ Ewart recommends: (1) An early operation without resection; (2) a long incision between the ribs; (3) no drainage-tube, or a very short one (gauze may be used instead); (4) alternating right and left decubitus, to favor evacuation by gravitation and by respiration respectively; (5) the patient to get up, if possible, a day or two after the operation; (6) and to use special exercises, throwing most of the breathing upon the collapsed lung; (7) the "*hammock treatment*" during the day, when not taking exercise, the patient to lie on the diseased side, well toward the foot end of the hammock,

¹ Journal of the American Medical Association, June 24, from Journal des Praticiens, May 20, 1899.

² Johns Hopkins Hospital Bulletin, April, 1899.

³ British Medical Journal, August 19, also Journal of the American Medical Association, September 9.

⁴ British Medical Journal, January 13.

⁵ The Polyclinic, London, June, 1900.

with only a small cushion under the head, so that the thorax lies in a deep hollow and the pelvis rises. The effect is to paralyze the sound half of the chest and of the diaphragm by bending it in, and to render the other side strongly convex, thus opening up the wound and emptying the empyema by gravitation, while considerable respiratory movement is called forth in the collapsed chest, instead of its being suppressed by the hard pressure of a bed. In fact, the hammock carries out simultaneously in the one position the two indications, which generally have to be taken in turns.

THORACENTESIS. This operation is rarely fatal, but the risk should never be forgotten. The acute oedema which causes death is attributed by N. Ortnier to an undue permeability of the pulmonary vessels after compression, favored by impaired mobility of the mediastinum, owing to cardiac dilatation or mediastino-pericardial adhesions. An examination should be made for these possible complications, which demand cardiac stimulation and slowness of evacuation of the fluid, with immediate cessation if violent cough is set up.

A tentative aspiration is called for in the pleurisies of children by the frequency and latency of their empyemata. Maguire¹ does not trust to the hypodermatic syringe. He wisely, I think, prefers using the complete aspirator and a fair-sized needle. If serous and not blood-stained the fluid should be evacuated; but much blood is an indication not to proceed, lest even in the absence of sarcoma any simple congestion of the lung and pleura be aggravated. Pulmonary tuberculosis is regarded by Maguire as a contraindication to aspiration, yet another view is supported by Hildebrand's² results. His experimental laparotomies on dogs inoculated previously with tubercle were checked by inoculations on another series, all of which died four months after inoculation, while those subsequently operated on survived from four to eleven months, and two were still alive after eleven months. The late operations were much more efficacious than the early ones. He attributes the result to the hyperæmia set up by the operation in the serous membrane.

The treatment of non-tubercular effusions without aspiration should be conducted with due regard to nutrition and hygiene. Maguire³ believes in gray powder, and, when the pyrexia has subsided, in open air and judicious exercise.

Pneumothorax. PNEUMOTHORAX IS SOMETIMES TRACED TO GAS-PRODUCING BACTERIA. Thus in F. G. Finley's case⁴ a pleuro-sub-diaphragmatic abscess contained the gas-forming bacillus coli. He

¹ British Medical Journal, August 19.

² Journ. de Clin. et de Chir. Infantiles, August 10, 1899; Lancet, September 9, 1899.

³ Braithwaite's Retrospect, vol. cxx.

⁴ Montreal Medical Journal, 1899, p. 769.

refers to three other cases: Levy¹ detected in the pleuritic fluid Welch's bacillus capsulatus aërogenes; in A. G. Nichol's² observation of perforating appendicitis a pericardial as well as a pleuritic collection of gas occurred, although there was no communication between the thoracic cavities and the peritoneum; in May and Gebhart's³ patient, with pericarditis and empyema, pneumothorax resulted fourteen days after. The gas withdrawn burned with a blue flame. The presence verified H, CO₂, and N and the absence of O were proofs of the intrapleural production of the gas, and the bacillus coli and the staphylococcus were found in the exudate.

In this form abdominal disease is most often present, and "the onset of the condition seems to be gradual, not abrupt." These are important differential points between the "bacterial" and the "leakage" cases.

PNEUMOTHORAX AND SUBCUTANEOUS EMPHYSEMA.⁴ This condition occurred in a girl, aged seven years, who had fallen six days previously while running, and subsequently had chest pain, violent cough, and dyspnoea. Alveolar rupture was secondary to atelectasis with compensatory emphysema, for a cherry-stone was expelled by the cough.

For the last forty years Drasche⁵ has been in favor of surgical interference in the pneumothorax of phthisis, and has observed great alleviation.

LEFT PNEUMOTHORAX FROM PERFORATION OF GASTRIC ULCER. The abscess was correctly diagnosed by W. B. Ransom⁶ as pleural rather than subphrenic, although the tympanitic note was not only half-way up the normal cardiac area, but far below the costal arch. It was found post-mortem that the gastric and the pleural cavities formed one air-space.

HÆMOPNEUMOTHORAX. In a fatal case of hæmopneumothorax of unexplained origin⁷ sudden, intense pain in the right hypochondrium developed which radiated to the umbilicus and to the shoulder. Paracentesis on the third day brought out air and blood with considerable pressure. After death, eight days later, the pleura contained sixty ounces of blood, but no air, and no cause could be found.

Rapidly fatal hæmopneumothorax in Newton Pitt's⁸ case was apparently due to rupture of an emphysematous vesicle near the apex, and a ruptured band of adhesion was probably the source of hemorrhage.

¹ Arch. für Exp. Pharmak., Bd. xxxv.

² British Medical Journal, 1897.

³ Arch. für klin. Med., Bd. lxi.

⁴ Kolb. Deutsche medicinische Wochenschrift, August 24; Epitome, British Medical Journal, January 27.

⁵ Wiener klin. Rundschau, November, 1899; Journal of the American Medical Association, December 23.

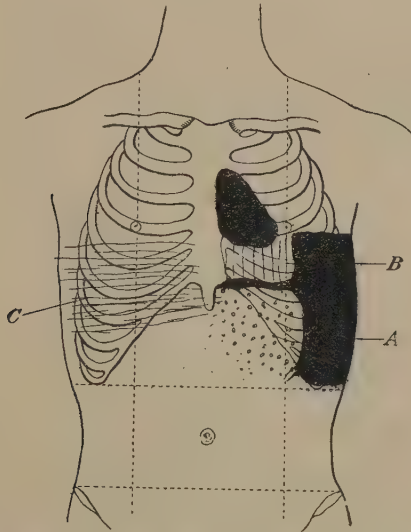
⁶ Lancet, November 11.

⁷ H. B. Rolleston, British Medical Journal, February 17, 1900.

⁸ Ibid.

Kingston Fox's¹ case, M., aged forty-four years, ultimately recovered after aspiration of 15 ounces of dark blood on the tenth day and three days later of 44 ounces of blood with much air. Sir Dyce Duckworth regarded the cases as due to rupture of lung, pneumothorax, hemorrhage—all consequent upon tuberculosis.

FIG. 2.



A. The dotted area gave a stomach note. B. The area covered with vertical lines gave the high-pitched note of pneumothorax. C. The area covered with horizontal lines gave liver-dulness. The black area shows the dulness due to empyema.

Intrathoracic Surgery. **HERNIA OF THE DIAPHRAGM.** Two cases were reported at Columbus by Floyd McRae.² Both cases were operated upon and reduction effected. One of the patients died from ether narcosis. The other patient, whose diaphragm was likewise sutured, made a good recovery.

HYDATID CYST OF THE LUNG TREATED BY INCISION AND DRAINAGE; RECOVERY. In their remarks on this case, R. M. Simon and Leonard Gamgee³ state that treatment by incision has a very high rate of success; according to Tuffier's statistics, more than 90 per cent. (55 out of 61) recover. Aspiration has often proved fatal, and is now practically inadmissible. Bond's method of treating hydatids by incision and removal of the cyst without subsequent drainage is not so well suited for the lung as for intra-abdominal hydatid tumors.

PULMONARY ABSCESS. A case in which drainage was successfully carried out is narrated by Charles A. Morton.⁴ The pleura having been

¹ British Medical Journal, February 17, 1900.

² Medical News, June 24.

³ Lancet, January 24, 1900.

Brit. Med. Journal, Feb. 17, 1900.

found non-adherent, the lung had to be stitched to the wound before it was incised. He also refers to another case previously published,¹ in which the pleura was adherent, and which would have recovered had not the patient succumbed to an epileptic fit. In both instances a piece of rib was excised.

A successful operation for pulmonary gangrene is reported by von Meyer.²

The treatment of penetrating wounds of the chest is reviewed by M. Delorme.³

THE PHYSICAL METHODS OF EXAMINATION OF THE CHEST.

The X-ray Methods. These may be held to supplement rather than supplant our previous methods, but T. Mellor Tyson and William S. Newcomet⁴ think them superior to any other means of physical examination for the detection of early and of advanced phthisis. This is also the view of Francis H. Williams,⁵ whose 2000 cases demonstrate the early diagnosis of phthisis, pleurisy, pneumothorax, bronchitis, asthma, emphysema, and pneumonia. A pneumonic or tubercular lung resists penetration by the X-ray ten times more than a healthy lung; therefore, a central pneumonia, otherwise unrecognizable, would be seen on the screen as surely as a superficial pneumonia.

J. E. Stubbett⁶ also praises its practical value in diagnosis. In carrying out the Murphy treatment the degree of compression exerted by the inflowing nitrogen can be watched and the operation rendered safer and more effectual. In emphysema the excursions of the diaphragm are seen to be reduced; this is also the case in asthma, but sometimes on the affected side the diaphragm simply flutters instead of moving, while on the healthy side its oscillations may be increased.

Francis H. Williams, who examined forty-five adults, states the average range of the movements of the diaphragm to be two and a half inches for the left wing and one and a half inches more for the right wing.

Auscultation. An *unusual cardiopulmonary rôle* is described by James Carslaw⁷ and in a later issue by Thompson Campbell. In Campbell's case of pulmonary cavity at the left apex the creaking and

¹ British Medical Journal, 1897, vol. ii., p. 800.

² Deut. Zeit. für Chir.; Lancet, July 8, 1899.

³ Academy of Medicine; Lancet, July 8, 1899.

⁴ Journal of the American Medical Association, January 13.

⁵ New York Medical Record, May 9, 1899.

⁶ Philadelphia Medical Journal, January 6, 1900.

⁷ British Medical Journal, July 8, 1899.

"cracked-pot" systolic pulmonary sound could be heard by anyone standing by the bedside. The heart drives the air from the cavity through the bronchus, and with its return during diastole a fainter murmur may occur. The "pulse breath" is also due to large cavities or pneumothorax. In some aneurisms the pulsation causes in the trachea a rhythmic, blowing sound (Drummond), and some healthy persons have a pulsatile respiration. These sounds are all different from the cardiopulmonary râle.

"*A movable goitre*," partly incarcerated behind the sternum, was diagnosed by Schiff¹ in a man, aged fifty-five years. This condition sometimes produces a rushing sound, as if from a ventilator, at each respiration.

Percussion. Dorsal percussion and percussion of the spine, described by Ewart,² have some practical clinical aspects. A dorsal "percussion-map" gives the normal areas of the visceral dulnesses, some of which were originally described by Piorry. "Piorry's nucleus" of hepatic dulness is the name proposed for one of the most striking among the latter.

The spine as a whole is resonant, and any marked dulness is of diagnostic value, provided we bear in mind that normally a few vertebræ are relatively dull, namely, the fifth dorsal (infratracheal dulness), the ninth dorsal (left auricular dulness), and the second lumbar (pancreatic dulness).

The normal "interscapular dulness" possesses, like the percussion of the spine, special interest for the surgeon; while a knowledge of the post-hepatic, post-splenic, and post-cordial dulnesses, and of the lower dorsal dull patch is essential to the physician.

The percussion of the left auricle of the heart, hitherto undescribed, like that of the vertebral spine, is noticed in these pages in connection with the diagnosis of cardiac affections.

Wintrich's "*tracheal*" sound has been turned by C. F. Hoover³ to a novel use. In some conditions vibrations are set up by percussion in the bronchial and tracheal column of air, and are transmitted from the site of percussion along the air-passages and through the open mouth or nose to the observer's ear. Again, the percussion note over pulmonary cavities varies as the patient keeps the mouth alternately open or closed. Finding that the tracheal sound is not normally elicited by percussing the manubrium, Hoover inferred that its presence might be a sign of mediastinal tumor. The trachea having been made tense by elevation of the chin, the patient takes a deep breath and continues to inspire,

¹ Gessells. *der Aerzte Wien.*, November, 1899; *Med. Press and Circ.*, November 15.

² *Lancet*, July, 1899; *International Medical Magazine*, September, 1899.

³ *American Journal of the Medical Sciences*, October, 1899.

even after filling the chest so as to keep the vocal cords well apart, the mouth being opened and the tongue protruded. Meanwhile the examiner *percusses* gently the manubrium and places his ear in front of the patient's mouth. When the "tracheal sound" is present it will be identified by its metallic resonance. Any solid or liquid mass, such as mediastinal tumor, aneurism, or pericardial effusion, rising to a high level, communicates the percussion vibrations to the bronchi. The "tracheal sound," not being set up by consolidation or excavation of the upper lobes, nor by pleurisy with effusion, is of much value. It has proved in Hoover's hands of much service for the diagnosis of mediastinal tumors; he has not found any reference to it in the literature.

THE TRACHEOBRONCHIAL GLAND ENLARGEMENT, alleged by Fernet to be an early sign recognizable by percussion, has been referred to in *PROGRESSIVE MEDICINE*, Vol. III., p. 18. Ewart calls attention to the dulness normally yielded by these glands and neighboring structures and to the dulness which they normally impart to the fifth dorsal spine.¹ Familiarity with the "*fifth spine dulness*" is of yet greater use in identifying non-tubercular enlargements of the infratracheal and bronchial glands.

INSPIRATORY PHENOMENA IN BRONCHOSTENOSIS. At the Vienna Medical Club, Holzkecht² maintained that in bronchostenosis the mediastinum is always pressed toward the affected side, owing to the different balance of pressure in the two halves of the thorax. In a male patient, aged fifty-four years, the shadowy, indistinctly pulsating mass to the right of the vertebræ was transported by a deep inspiration to the left side as well as the heart.

In another case, F., aged thirty-five years, presenting symptoms of stenosis of the vena cava superior and of mediastinal tumor, in deep inspirations all was also pushed to the right side.

THE THERAPEUTICS OF DISEASES OF THE CHEST.

HEROIN. This drug still claims attention.³ It is supposed to soothe the peripheral nerves without depressing the respiratory centre (some think that it is stimulated), and without the discomforts and the dangers of morphine and codeine, for its therapeutic dose ($\frac{1}{12}$ to $\frac{1}{6}$ grain or $\frac{1}{6}$ to $\frac{1}{3}$ grain) is one hundred times less than the poisonous dose. Except slight dizziness and rarely a dryness in the throat, Max Einhorn⁴ has never

¹ "The Practical Aspects of Dorsal Percussion, and in Particular of the Percussion of the Spine." *Lancet*, July, and *International Medical Magazine*, September, 1899.

² *Med. Press and Circular*, March 14, 1900.

³ *Therap. Gaz.*, January, 1900.

⁴ *Philadelphia Medical Journal*, October 28, 1899; *British Medical Journal*, November 25.

seen any unpleasant symptoms even from its prolonged use, which was beneficial, not only in phthisis, but in asthma, bronchitis, cardiac lesions, gastralgia, and gastric hyperæsthesia. He recommends the following formulæ :

R.—Heroin 0.005
Sacchar. albæ 0.3

Ft. pulv. No. xiv.

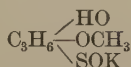
Sig.—One powder twice daily.

R.—Heroin muriat. 0.075
Aque dest. 60.

Sig.—One teaspoonful twice daily.

The poisonous properties of heroin. Harnack's¹ experiments and those of Dott and Stockman show that heroin is a much greater respiratory depressant than morphine, and also a cardiac depressant; in addition it gives rise to muscular twitchings and convulsions; whereas Dreser found complete muscular relaxation. The maximum adult dose should not exceed 0.005 gramme. The dose for a child should be $\frac{1}{19}$ mg.

THIOCOL, or potassium orthosulphoguaiacolate,



an improved preparation of guaiacol, is a white not unpleasant and odorless powder, soluble in water. Its administration is stated to be useful (dose 15 to 23 grains) in phthisis, chronic bronchial catarrh, emphysema, and putrid bronchitis.² *Sirolin*³—a solution of thiocol in syrup of orange. Its dose is from 1 to 4 drachms or more—"is superior" to guaiacol, to creosote, and to their carbonates.

HOW TO MAKE POULTICES. Poultices have lost favor, and the art of making them is in danger of being forgotten. We welcome S. E. Earp's⁴ practical hints as to their uses and their preparation: (1) They relieve congestion and tension both of vessels and of tissues; they favor resolution and absorption and hasten suppuration. (2) To deodorize a foul ulceration charcoal is sprinkled over the poultice. In preparing a poultice crushed linseed is used (2 parts to 5 parts of boiling water). A few drops of oil and a single layer of muslin will obviate any tendency to harden and to adhere when drying on the skin. Bread poultices may be kept moist by adding marshmallow, glycerin, or vaseline. Poultices should be covered with waterproof material and removed

¹ Münchener medicinische Wochenschrift, July 4, 1899; Epitome, British Medical Journal, August 26.

² Frieser. Therap. Monats., December, 1899; Epitome, British Medical Journal, April 21, 1900.

³ Oelberg. Wien. med. Presse, February 25, 1900.

⁴ New York Medical Journal, February 3.

when they have cooled down. In pneumonia, peritonitis, abdominal pain, etc., the poultice should be of large size, and then it often relieves.

DRY VERSUS MOIST HEAT. While recognizing the value of ice, no physician can doubt the local efficacy of strong heat. Moist applications are supreme in relaxing muscle and fibrous structures; but often dry heat will suffice, which needs no nursing skill and entails no scalding of hands or damping of sheets. An old-fashioned warming-pan or any suitable tin box (not soldered, but welded) will enable the hot flannel to be conveyed from the oven to the bedside with little loss of heat.

Mitigated mustard fomentations are readily prepared with a teaspoonful of mustard in a pint of boiling water; but I often use in chest and heart practice the large, dry mustard fomentation. A twofold piece of gauze is dusted over with mustard, rolled up, and quickly warmed through, the larger flannel which is to surround it having meanwhile been strongly heated. The mustard side of the gauze is then applied and the flannel over it. A grateful heat is kept up by the mustard, as it becomes slightly dampened by the cutaneous moisture. This may be left on for long periods, and is often conveniently substituted for the damp mustard fomentation after one application of the latter—an excellent remedy for the common form of insomnia with cold feet.

THE INTRATRACHEAL METHODS. *Intratracheal injections* are facilitated by Albert C. Heath's¹ method: An ordinary oil atomizer bottle with a laryngeal canula is fitted with a cut-off, whereby the quantity injected is regulated by the pressure of the thumb.

The inhalation method in various catarrhs, pneumonic conditions, and phthisis is carefully studied by C. A. Penrose.²

Lyle's local treatment of lung diseases consists in the introduction of remedies in a state of minute subdivision by inhalation. Objections have been made to his method, but he regards them as theoretical rather than practical.³

Various advances have been made in inhalation methods and instruments. The apparatus depicted by Lacroix⁴ is easily sterilized, causes no effort of breathing, and volatilizes by means of the boiling water introduced into the bottle any volatile ingredients introduced into the inner tube; it is available for the nose, throat, and larynx. For tuberculosis of the larynx he uses the following:

R.—Formalin (gradually increased) from	. . .	45 ℥—12½ ℥.
Bromoformi	. . . . .	. . . 10–20 drops.
Aquæ	. . . . .	ad 30 ℥—7½ ℥.

¹ Journal of the American Medical Association, September 23, 1899.

² Johns Hopkins Hospital Reports.

³ Journal of Tuberculosis, July, 1899; Journal of the American Medical Association, August 12.

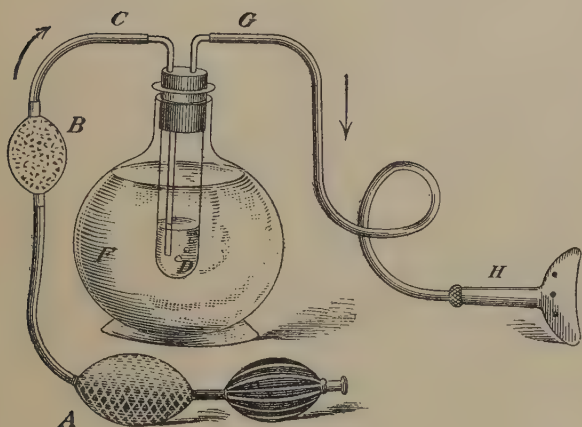
⁴ Arch. Internat. de Laryngol., 1899, No. 2; British Medical Journal, October 14.

One gramme of menthol may be added.

Oppenheimer is now supplying an "aërizier" producing an extremely fine and persistent cloud.

James C. Ballard's¹ *nascent ammonium chloride inhaler* is ingenious and compact. Ammonia (20 to 30 drops) is added to the water, which fills three parts of the bottle; and a short double tube fixed into the stopper allows the air inspired as it enters the inhaler to pass over a small quantity of salt saturated with strong, pure hydrochloric acid,

FIG. 3.



Lacroix's apparatus.

FIG. 4.



Ballard's inhaler.

and to travel through the bent tube to the bottom of the fluid. Ballard claims that the vapor is antiseptic, expectorant, and stimulating, and immediately improves the condition and the comfort of phthisical patients, procuring in addition refreshing sleep. Various remedies may be introduced into the solution, such as :

R.—Tr. iodi. comp.,
 Acid. carbolic āā f 3 ij.
 Glycerini ad f 3 j.—M.

Sig.—Five drops into the inhaler before use.

Or—

R.—Liq. iodoformi (10 per cent.),
 Campho phenique āā 3 j.—M.

Sig.—Twenty drops into the inhaler,

¹ Therap. Gaz., March, 1900.

Or—

R.—Guaiacol,
Terebene,
Menthol,
Thymol,
Sp. chloroformi āā ʒj.—M.
Sig.—Five to ten drops into the inhaler morning and night.

In the "*funnel method*" the diffusion of oxygen begins in the funnel itself, and owing to the disproportionate orifice of the latter little of the oxygen enters the mouth or nose. The gas should be conveyed into the nose by a continuous tube.

*Liquid air*¹ produces extreme cold (312° below 0° F.), which might be of varied use, perhaps even in cancer; but the attendant dangers have deterred Prof. Charles E. Tripler from supplying it promiscuously to the profession.

A PROTECTIVE ACTION OF THE LUNGS against various poisonous agencies is demonstrated by Cafiero's² experiments in dogs. In the case of butyric acid, potassium arsenite, atropine, and curara a larger dose was needed to cause death when it was made to pass through the pulmonary circulation. Since, on the contrary, the reverse followed when pulmonary juice was added, and as inhalations of oxygen did not diminish the toxicity, Cafiero believes that the protection is due to the essential respiratory function of the lungs.

PULMONARY TUBERCULOSIS: ITS ETIOLOGY AND PREVENTION.

"**Tubercular**" and "**Tuberculous.**" Those who feel any interest in orthoepy, or who are perplexed by the factitious change which has come over our free use of these two terms in their respective spheres, should read, in the *Lancet* of May 27, August 5, 12, and 19, 1899, the arguments put forth by various writers. W. Huggard maintains, after consulting leading philologists in England, that since "tubercular" conveys the notion of kind and of relation, and "tuberculous" one merely of number or quantity, it follows that in using "tubercular" as before we are always right, while "tuberculous," if used indiscriminately, must often be wrong. A universal substitution of "tuberculous" for "tubercular" would amount to throwing away our means of expressing in one word a distinct and definite idea—that of *repletion with bacillary tubercles* as distinct from affection with bacillary tubercular

¹ Medical Record, July 22, 1899.

² Gaz. degli Osped., August 13, 1899; Epitome, British Medical Journal, September 30, 1899.

disease—just at the time when we are most in want of fine and clear distinctions, in view of the separate pathological spheres of the bacillus with its nodular productions and of the toxins which can work mischief without producing tubercles.

Trudeau's¹ suggestive paper calls our attention to the many problems which still await their solution. The explanation of the varying manifestations of the disease, of the nature of the virulence of infecting bacilli, of their mode of growth out of the body, and of predisposition; and in pathology the explanation of the chemical changes in the digestive secretions and the blood, of the factors determining local immunity or the presence of bacilli in different secretions; of the morphological peculiarities, such as beading of the bacilli, spore formation, etc., and much else relating to chemical bacteriology; most important of all the mechanism of tuberculin reaction and of the immunizing treatment. All this is obscure, and not least remarkable is the problem as to the pathological changes which may cause cure in peritoneal tuberculosis after laparotomy.

Etiology. Phthisis, as distinct from simple tuberculosis, is always a mixed infection. "The greatest danger" for the tuberculous is that they may become phthisical by the invasion of destructive organisms.

George F. Still² regards the lungs (by inhalation), not the intestine (through milk), as the most common channel of infection in children, although the danger from milk should not be minimized. J. Walter Carr³ points out that his own post-mortem statistics confirm those of Still. Again, Edward Moore⁴ adduces arguments against the alleged transmission of bovine tuberculosis to man, and *vice versa*. He believes the bacillus to be specific to each species.

There is a growing impression that⁵ the tonsils are often concerned in affording entrance to various infective germs, including those of rheumatism. This is one of the reasons urged by the advocates of the *isolation of tonsillitis*. Rochemont⁵ mentions the occurrence of faucial angina in epidemics, particularly in the Altona Hospital, where all similar cases are now relegated to a separate block, and he describes the presence of a variety of bacilli in the absence of the diphtheria bacillus.

Tuberculosis and Pregnancy. E. Cioffi's⁶ experience confirms that of Maragliano concerning the excessive mortality among tuberculous

¹ Bulletin of the Johns Hopkins Hospital, July; Journal of the American Medical Association, August 19.

² British Medical Journal, August 19.

³ Ibid., September 2, 1899.

⁴ New York Medical Journal, September 9.

⁵ Münchener medicinische Wochenschrift, March 7, 1899; British Medical Journal, July 8, Ep.

⁶ Gaz. degli Osped., Milan, July 16; Journal of the American Medical Association, August 19.

parturients. Of 188 cases of circumscribed tuberculosis the general percentage of deaths within twenty-one months was 18 per cent., but among those who had passed through a pregnancy the percentage was 94 per cent. Where anomalous weakness or pyrexia persists, tuberculosis should always be suspected, and, with Maragliano, he believes that pregnancy should be interrupted where tuberculosis is suspected or revealed.

The danger of sexual connection for subjects liable to hæmoptysis is insisted upon by Moncorge.¹

Phthisis in Asylums for the Insane. Dr. F. G. Crookshank² gives good reasons for supposing that "the true phthisis death-rate of asylums is something not much less than twice the official death-rate (which for 1891 to 1895 was 1463 per 1,000,000 living at all ages). Isolation and open-air treatment in separate blocks and improved sanatorium buildings and a more generous dietary (containing more fat) are among his recommendations.

Living and Dead Bacilli. The clinical distance between the cases of virulent type and those (fortunately more frequent) of short, local, non-infective, often latent and generally curable affections is attributed by Huguenin³ to the presence or absence of life in the infecting bacilli. *Dead bacilli* are still deleterious by their toxins (respectively producing necrosis, inflammation, fever, and cachexia, as proved by Mafuggi, who also isolated an antitoxin element capable of curing tuberculosis in animals). After their death (proved by experiment on the peritoneum of a guinea-pig), when conveyed to various organs they may, according to Strauss and Gamalaya, produce a local miliary tuberculosis with some cachexia, but with great tendency to fibrous healing.

The survival of bacilli is estimated at eight to ten days under the influence of putrefaction; twenty minutes to three hours in direct and six to eight days in diffuse sunlight; six weeks in snow at 14° F.; and in the dried state usually one month, but sometimes six or even eight months. They are comparatively resistant to heat, and survive longest in unhygienic human habitations. In the sputum of those infected with living bacilli from 10 to 15 per cent. of the bacilli are alive; but, dead or alive, they all stain alike.

In infections with dead bacilli a spread of the disease is impossible, as dead bacilli do not multiply, and no infections of glands and secondary infection with cocci are observed. A commonplace scar may be left at the apex of one lung, such as might be due to many other causes (streptococcal invasion, etc.). Bacilli can be found in the sputum for weeks,

¹ Med. Mod., May 10; New York Medical Journal, July 1, 1899.

² Journal of Mental Science, October, 1899; Lancet, December 23.

³ Lancet, December 16, 1899.

but inoculation proves them to be dead. The symptoms are those of a bronchial catarrh localized in one apex, and of an infiltration accompanied by fever of several weeks' duration and rapid cachexia, which terminates with the fever. The whole process is only from five to six weeks' duration under proper treatment. A knowledge of these results is of value to the practitioner who has to give a prognosis.

Localization. The primary localization of tubercle was identified by Birch-Hirschfeld,¹ in thirty-four cases of sudden death, as a subepithelial tuberculous infiltration, with secondary peribronchial inflammation, in the mucous membrane of a bronchus of medium calibre—the ramus apicalis posterior of the posterior subapical region. Narrowing of the bronchus leads to collapse of the lobular district, and this may become cicatrized and encapsulated; but if ulceration should take place the bronchus may open up again as a channel for the transmission of tubercular material, and with the further risk of rupture of vessels. He advocates the usual rules for asepsis of inspired air and inspiratory gymnastics.

The Prevention of Phthisis. Max Girsdansky's² thoughtful aphorism, "the broom is the chief and most serious danger to man," is at any rate well founded.

Recent measures of prophylaxis include a trial of voluntary notification at Norwich; the prohibition of spitting in the streets of Paris; the prohibition of stays in Roumanian schools, and many other regulations special to towns or localities.

Formaldehyde as a Germicide. Acting on Prof. T. J. Burrill's report pointing to lack of penetrating power and to a remarkable uncertainty in the effect produced upon micro-organisms, the Illinois State Board of Health have recommended disinfection not by formaldehyde, but by sulphur dioxide (4 pounds of sulphur to each 1000 cubic feet), followed by thorough washing with a 1:2 solution of bichloride.

The Diagnosis. The systematic diagnosis, according to C. Bäumler,³ should be attempted by auscultation, percussion, the microscope for bacilli, tumor elements, clots, asthma crystals, actinomyces, and echinococci. The temperature, in agreement with Penzoldt's⁴ tests, needs prolonged serial observations at rest and after exercises. The body weight should be noted every week. If all is negative, injections of tuberculin should be resorted to.

¹ Deut. Arch. für klin. Med., 1899; Journal of the American Medical Association, July 8, 1899.

² New York Medical Journal, September 9.

³ Deutsche medicinische Wochenschrift, Berlin, May 25; Journal of the American Medical Association, June 17.

⁴ Journal of the American Medical Association, p. 993.

S. A. Knopf¹ still prefers the older means of diagnosis to the novel methods, including the X-rays. The possibility, however small, of a generalization of tuberculosis after the tuberculin test, is an objection which would appeal to any physician in his own personal case.

Barbour² dwells upon the value of physical signs, clinical history, and search for bacilli, and cautions the inexperienced against using tuberculin. Denny³ thinks that the pulse and the examination by X-rays are valuable adjuncts to diagnosis.

The "myodemia" (originally described by Stokes and upheld by Lawson Tait) set up by percussion is awarded by Hugh Walsham⁴ little significance, and in this I concur. It indicates lowered nutrition of muscles, but it is not distinctive of phthisis.

THE TUBERCULIN TEST. Otis⁵ conclusions are based upon 111 cases: (1) The tuberculin test gives earlier indications than the X-ray. (2) Five to 10 milligrammes of Koch's original tuberculin is the dose necessary. (3) This dose is harmless. On the other hand, (4) proved tuberculosis may fail to react with doses of from 10 to 12 milligrammes. (5) *Syphilis* in some cases gives a reaction. (6) Non-tuberculous persons may give a general reaction with a larger dose than the test dose. (7) The reaction may be delayed six to twenty-four hours.

Otis' rules are: (1) Always use the same tuberculin and the same standard strength. (2) Inject deeply into muscles with all antiseptic precautions. (3) Start a two, three, or four-hourly temperature-chart twenty-four hours before injecting. (4) Allow several days to elapse before a second test.

In early cases depend upon the general reaction. In later cases, if general reaction fails, look carefully for local signs.

Denison⁶ commends a 1 per cent. solution of crude tuberculin in a 75 per cent. watery solution of carbolic acid (begin with a 1 to 2 mg. injection, rising to 25 or 30 mg.).

In Head's⁷ 487 collated cases, 54 per cent. reacted and 46 per cent. failed. In a series of 136 observed cases, 83, or 61 per cent., gave evidence of the presence of tuberculosis. Some advanced cases did not react (5 per cent. in a series of 83). In apparent health 1 in 12 reacted; and of 64 thought to be free from tubercle as many as 18 per cent. gave a positive result. Head estimates the success of the test at

¹ Journal of the American Medical Association, December 9, 1899.

² Journal of Tuberculosis, Asheville, N. C., July; Journal of the American Medical Association, August 12.

³ Ibid.

⁴ Lancet, January.

⁵ Journal of Tuberculosis, Asheville, N. C., July; Journal of the American Medical Association, August 12.

⁶ Journal of the American Medical Association, January 6, 1900.

⁷ St. Paul Medical Journal, September, 1899.

92 per cent. in pulmonary and 71 per cent. in cervical glandular, 88 per cent. in acute pleuritic, at 100 per cent. in chronic pleuritic, at 91 per cent. in arthritic tubercle, and at 100 per cent. in tubercular peritonitic, in suprarenal disease, and lupus.

Max Beck,¹ of Koch's Institute, characterizes as groundless the fear of disseminating tubercle by diagnostic injections and analyses. In 54 per cent. of 2137 injected cases the diagnosis was made by tuberculin. It is the most delicate test for the smallest foci, and, therefore, of the greatest prophylactic importance. Febrile patients are not injected.

The following experimental evidence was obtained by the Cheshire County Council² with reference to cattle. "Continuous injections of tuberculin at short intervals will cause the reaction to cease in animals previously shown to be tuberculous." To obviate any dishonest practice in this direction, only duly accredited persons should be allowed to purchase tuberculin. The experiments were not encouraging as regards any curative property.

The toxic principles found according to the researches of E. A. de Schweinitz,³ Chief of the Biochemic Division, United States Department of Agriculture, in the serum of horses after injection with a liquid extract of bacilli attenuated through several generations upon artificial media are: (1) Necrotic acid, (2) a fever-producing substance, and (3) one acting as a direct poison. After separating the fever-producing nucleo-albumin he has isolated a crystalline, fatty acid as the probable agent of coagulation necrosis. This body is probably a fever-producing principle, and the simultaneous influence of these two principles may explain the want of continuity in the reaction of tuberculin.

THE EARLY DIAGNOSIS OF PHTHISIS BY THE RÖNTGEN RAYS has been made by Francis H. Williams⁴ in 165 incipient cases, with only two failures. The screen is more trustworthy than photographs. Frederick I. Knight⁵ confirmed these statements, and J. E. Stubbett held that the screen was far more accurate and convenient than the stethoscope. The method was especially useful in cases with foci scattered throughout the lungs and with equivocal physical signs.

LIFE INSURANCE OFFICES might, as suggested by W. B. Ransom, in view of the largely diminished mortality from phthisis, relax their hard-and-fast rules and their absolute objections. If a stringent stipulation were made for the adoption by candidates of a relatively perfect hygiene

¹ Deutsche medicinische Wochenschrift, March 2, 1899; British Medical Journal, Epitome, April 22.

² Lancet, February 10, 1900.

³ British Medical Journal, December 30.

⁴ Medical News, September 16, 1899.

⁵ New York Medical Record, May 13; British Medical Journal, Epitome, June 3.

much good would result to the community from prophylaxis, not only at home, but in offices and workshops.

Williams suggests that the fluorescent screen might be utilized in connection with examinations for life insurance as affording the most reliable evidence of the condition of the thoracic organs.

The appearance of the chest in phthisis is deceptive as to its real shape, which, according to Woods Hutchinson,¹ is not flattened, as usually described, but cylindrically elongated. The false impression conveyed by a front view is due to the attitude of the shoulders.

The Treatment. THE SPECIFIC TREATMENT OF TUBERCULOSIS BY TUBERCULIN. F. Maragliano's² "aqueous tuberculin," about five times more toxic than the glycerin extract, also yields a dry powder—an alcoholic precipitate and extract—and, by adding 1 per cent. sulphuric acid also, crystals possessing a toxic power of 1:3333. The toxic action of each is neutralized by serum. The strongest aqueous tuberculin kills a guinea-pig at 1:100, but the standardized preparation for distribution kills only at 1:20,000 or 1:25,000. The watery extract was successful in Sutherland's³ own case and in five of twelve cases treated.

Serum treatment successes are reported by Paul Paquin,⁴ who promises us even better results.

The "*auto-serous method*" is not pure transcendentalism. Bactericidal powers have been traced in the serous effusions in phthisis. In serofibrinous pleurisy Gilbert and Scarpa have successfully injected 2 to 10 c.c. of the patient's own serum; and U. Arcangeli⁵ made auto-serous injections in five cases of tubercular peritonitis and cured two.

L. F. Flick⁶ recommends that a fly blister be raised for reabsorption.

Charles H. Lewis⁷ believes in reinjecting the serum aspirated from the pleura mixed with methylene-blue as deadly to the bacilli.

THE MEDICINAL TREATMENT. Adequate facilities for the hygienic treatment are almost capable of superseding medication; but when they are wanting we must resort to adjuvants rather than to specifics,⁸ to

¹ British Medical Journal, October 28.

² Gaz. degli Osped., Milan, June 11 and 16; Journal of the American Medical Association, July 15, 1899.

³ Journal of Tuberculosis, July; Journal of the American Medical Association, August 12.

⁴ New York Medical Journal, February 10; Journal of the American Medical Association, February 24, 1899.

⁵ Il Policlinico, September 1; Journal of the American Medical Association, November 4, 1899.

⁶ Journal of the American Medical Association, September 16, 1899.

⁷ Ibid., January 13.

⁸ L. F. Flick. Therap. Gaz., January 15.

heart tonics, digestive ferments, vegetable tonics, acids, iron, mercury, bismuth, charcoal, etc.

Dr. Holland,¹ of St. Moritz, has found creosote, guaiacol, carbolic acid, iodoform, benzosol, antipyretics, and inhalations of terebene, iodine, and eucalyptus useless. The carbonates of guaiacol and creosote are useful in bronchial catarrh. W. G. Schauffler² adopts a similar estimate of the place of drugs from a health-resort stand-point.

Thyroid extract has been used by Edwin Klebs³ in two cases. Both improved and increased in weight as well as in respiratory capacity and in appetite.

Irwin H. Hance gives creosote for the stomach with equal parts of whiskey in water or milk.

The carbonates of creosote and of guaiacol (creosotal, a thick, bitter fluid, and duotal a white tasteless powder, unirritating and not unpleasant) are recommended by Cornet. Creosotal (5 drops, increasing up to 30) is taken in milk, claret, or beef-tea or in capsules; duotal (from 3 up to 60 grains) plain or in cachets.

Immunity is best promoted by *iodine*, according to Flick, and he believes that euophen in olive oil evolves nascent iodine.

R.—Euophen	3j.
Ol. anisi	3j.
Ol. rosæ	Mj.
Ol. olivæ	3 ijs.

3j to 3iv to be rubbed into the armpits and thighs once or twice daily.

Essential oils are also of service (especially peppermint and thyme). Mendel's intratracheal injections consist of 3 c.cm. of the following:

R.—Essen. thyme	5 grammes.
Essen. eucalypti	5 grammes.
Essen. cinnamomi	5 grammes.
Iodoformi	5 grammes.
Bromoformi	5 grammes.
Ol. olivæ (sterilized)	100 c.c.

M. ft. solutio.

Flick thinks that *hæmoptysis* is best treated by nitroglycerin. Against the chills, fevers, sweats, and coughs due to mixed infections he recommends large doses of creosote in plenty of hot water some time before meals.

With the original view that night-sweats are conservative and seldom need repression, most physicians will probably not agree. I have found the hypophosphites of sodium, calcium, and iron and nocturnal supplies of food and alcohol most useful in controlling them, in addition to

¹ Therapeutic Gazette, January.

² Ibid.

³ Berliner klinische Wochenschrift, December 11, 1899; Lancet, January 27.

direct checks, such as atropine, picrotoxin, etc. Again, early hemorrhage has sometimes been stated to be "salutary;" but our object has been hitherto to check hæmoptysis. In the management of late hæmoptysis, absolute rest, plenty of fresh air, if necessary constriction of the thighs and limitation of the movements of the chest by strapping, have been suggested to favor clotting. To these recommendations should be added that of morphine and of the *lateral posture on the bleeding side*, so as to avoid all risk of the patient drowning in his own blood; and these are still more important in the late hæmoptysis than in our routine treatment of the early bleeding.

Night-sweats are benefited¹ by 20 to 30 grains of camphoric acid administered two or three hours in advance.

Benjamin F. Lyle² uses hypodermatic injections of guaiacol (10 to 30 minims) and intratracheal injections. He believes that alcohol and cod-liver oil are over-used.

Besides advocating heart tonics William Porter³ dwells upon the avoidance of constipation; and C. R. Burr⁴ also thinks that microbes and toxins may best be checked by correcting intestinal indigestion.

The rectal administration of arsenic is strongly urged by Renaut.⁵ One-seventh of a grain of arsenous acid daily, as Fowler's solution, perhaps with a little laudanum, in three injections of 5 c.cm. distilled water during alternate weeks for months. *Cacodylate of sodium*, $\text{NaAs}(\text{CH}_3)_2\text{O}_2$ (containing 46.87 per cent. As) is less toxic and non-irritating, and fit for subcutaneous use (0.050 to 0.075 mg. daily), as well as for the rectal use. It is of service not only in tuberculosis, but in neurasthenia, chronic chorea, epilepsy, diabetes, Graves' disease, cancer of the stomach, and leucocythæmia. It has also been given with success (10 centigrammes daily) by Armand Gautier, Boutineau, Balzer, and Danlos for consumption, anæmia, malarial fever, and skin affections, and it is reported as efficacious in hectic fever. Epigastric cramps, diarrhœa, and transient albuminuria may follow over-doses.

In incipient phthisis *subcutaneous injections of cacodylate of sodium* (1 to 2 grains) improve surprisingly the appetite, the strength, and the blood-making power (Widal). But Hayem still thinks iron is the only specific for chlorosis.

Sodium vanadate in 2 mg. doses daily, or one-tenth mg. doses subcutaneously, is considered a powerful stomachic tonic and appetizer in

¹ Therapeutic Gazette, February, p. 101.

² Philadelphia Medical Journal, September 2, 1900.

³ Journal of the American Medical Association, March 3, 1900.

⁴ Boston Medical and Surgical Journal, February 1.

⁵ Bull. de l'Acad. de Med., 1899, No. 22; Epitome, British Medical Journal, October 14.

mild cases of phthisis by Anceau.¹ Vanadium is said to act like arsenic and iron, with an oxidizing power 20,000 greater than that of iron, and therefore much greater than that of arsenic.

Silver-nitrate injections over the course of the vagi in the neck (4 to 7 minims of a 2.5 per cent. solution; or 5 minims of a 5 per cent. solution; or (C. W. Bachman) 10 minims of a 2.5 per cent. solution) are again urged by Thomas J. Mays as of much value in phthisis. The injections should be made on the same side as the diseased lung.²

In the "*Cervello treatment*"³ patients are kept two or three hours daily in an atmosphere of formalin vapor evolved from a "vaporizer," and receive the open-air treatment at Signor Florio's Villa Hygeia at Palermo.

Formalin subcutaneously is also advocated by Professor Cervello, of Palermo, as a radical cure for tuberculosis.⁴

The *subcutaneous injection of vaseline* (10 c.c. daily) has been tried in thirty cases by M. H. Weber.⁵

Systematic injections of camphorated oil ($\frac{1}{2}$ to 1 grain camphor) under the skin have been used by Criegern⁶ for stimulation.

Knop's formulæ for iodoform⁷ are:

1. As an inhalation.

R.—Iodoformi 1 part.
Ætheris 10 parts.

Twenty minims to be used on the respirator with each inhalation.

2.

R.—Iodoformi gr. ss.
Codeinæ sulphatis gr. $\frac{1}{2}$.
Ext. cascariæ sagradæ gr. ss.

M. ft. pill.

3.

R.—Iodoformi gr. xxx.
Tannin gr. lx.

Divide into forty cachets; from two to four cachets daily.

Foxwell also considers iodoform the most satisfactory of all the anti-septic drugs he has used.

Intratracheal injections of menthol, guaiacol, and eucalyptol for the treatment of cough and pulmonary tuberculosis, introduced by Green, of

¹ Thèse de Paris, 1899; Epitome, British Medical Journal, December 2.

² Philadelphia Medical Journal, January; Journal of the American Medical Association, February 3.

³ Archiv de Farmac. e Terap., May and June, 1899; British Medical Journal, February 17.

⁴ Boston Medical and Surgical Journal, June 1, 1899.

⁵ Presse Méd., May 31; New York Medical Journal, July 1, 1899.

⁶ Berliner klinische Wochenschrift, October 23, 1899; Therap. Gaz., Feb., 1899; also Alexander, 1898.

⁷ Philadelphia Medical Journal, February 10, 1900.

New York, some years ago, were reported upon two years ago by Thompson, of Cincinnati, and again recently.¹

One to three drachms of a 2 per cent. solution of menthol injected an hour before meals allays the vomiting from excessive cough.

Cases of acute inflammation of the lung and bronchi are excluded, but this treatment is excellent for bronchiectasis, gangrene, syphilis, and tubercular disease.

EXPECTORANTS AND SEDATIVES are not needed for every variety of cough.² The "dry cough" is often a habit to be suppressed by effort and by sips of cold water, ice, etc., or by holding the breath. The painful, difficult cough is relieved by the following :

R.—Codeinæ sulphatis	gr. vj to viij.
Acid. sulphur. dil.	℥ iss.
Glycerini	℥ j.
Aquæ laurocerasi	℥ j.
Syrup. pruni Virginianæ	℥ ij.
Syrup. tolu	ad ℥ vi.

Sig.—A teaspoonful when needed ; not more than six teaspoonfuls in twenty-four hours.

A wide flannel band tied around the chest gives some relief by lessening the painful jar of the thorax.

MEDICATED AND SPECIAL FOODS. From a comparative test of *mixed-fat emulsion* and of cod-liver oil, W. J. Mersereau³ reports better results from the former.

As an alternative to the use of cod-liver oil, Guerder⁴ has injected a glycerin extract of the fresh liver, and has found this method harmless in animals. He dilutes the glycerin with saline solution and begins with small doses (8 to 16 minims).

Only one comment is necessary in connection with the dangers of glycerin as a subcutaneous injection.

A good formula for an emulsion of cod-liver oil is given in the *Medical News* for February 3d :

R.—Ol. morrhue	℥ vj.
Glycerini puri	℥ j.
Tinct. quillaie	℥ jss.
Aquæ laurocerasi	℥ j.
M. ft. emulsio (to be shaken).	

"Zomotherapy," or the administration of *muscle spasm*, pressed out of raw minced beef after soaking in water, is credited by J. Héricourt and C. Richet⁵ with an immunizing influence. Their previous experiments⁶

¹ Journal of the American Medical Association, July 8, 1899.

² Knopf. Pulmonary Tuberculosis, 1899.

³ New York Medical Journal, July 1, 1899.

⁴ Rev. de Therap., January, 1900.

⁵ Rev. Scient., March 10 ; Epitome, British Medical Journal, March 24.

⁶ Bull. de l'Acad. de Méd., November 28, 1899.

had shown that an exclusive raw meat diet greatly reduced the mortality among dogs artificially infected. They now suggest that zomotherapy might be used prophylactically in other affections besides tuberculosis.

OUR NEW THERAPEUTIC AGENTS. Heat, light, the Röntgen rays, and electricity present much analogy in their effects (Leopold Freund¹). *D'Arsonval's high tension currents*, alternating 200,000 to 1,000,000 times a second, are quite harmless to the human body beyond a local superficial anæsthesia lasting from two to fifteen minutes, but they greatly increase metabolism and destroy micro-organisms and their toxins. Their application by autoconduction or by condensation (three to ten minutes daily, or less if they cause dyspnœa or fatigue) promotes sleep, energy, appetite, catamenial regularity, lower uric acid, and increase urea. But it is probably less suited to phthisis than to many other affections.

Diffuse sunlight is a recognized essential in all treatment of tuberculosis. But concentrated sunlight has only recently been turned to definite use in tuberculosis and other affections of the skin. Finsen² as well as Widmark attribute the bactericidal property of light (originally demonstrated by Downes and Blunt) to the ultraviolet rays, and some activity also to the blue and violet rays. At his *Medizinske Lysinstitut* Finsen has obtained remarkable results in lupus. Finsen concentrates these rays upon the skin by a lens, 20 to 40 cm. in diameter, which contains between its two component plates a bright blue, weak ammoniacal solution of copper sulphate; the water absorbs the ultrared heat rays, and the blue color excludes much of the red and yellow rays. To prevent overheating by absorption cold water is run through a mantle surrounding part of the apparatus. In the absence of sufficient sunlight are lamps of 50 to 80 ampères supply the light. Illustrations showing the remarkable results of the treatment are appended to the paper.

Colombo's³ contribution to phototherapy is the recommendation to use *electric light baths* for not longer than five to eight minutes, when they are useful in stimulating all the functions without elevation of the temperature or disturbance of the circulation and without setting up more than a slight perspiration. He believes in the action of the ultraviolet rays.

Sun baths are recommended for tubercular joints by Millioz⁴ for periods of several hours each day. This form of treatment has for many years been in full operation at Veldes in Austria.

¹ Wien. Med. Presse, 1899, No 31; Epitome, British Medical Journal.

² Valdemar Bie's Remarks on Phototherapy. British Medical Journal, September 30, 1899.

³ Gaz. degli Osped., Milan, January 21 and February 11.

⁴ Thèse de Lyon, 1899.

The soft-soap treatment of local tuberculosis, originally recommended by Kapesser (1878), has been recently revived by Hoffa, of Würzburg, and by Hausmann, who reports favorably upon it.¹ A rise in the alkalinity of the blood from the absorption of potassium carbonate has been suggested to explain its mode of action.

The Surgical Treatment. *Pneumonectomy* is brought forward by John S. Pyle² as the future treatment of incipient phthisis on the strength of an experimental study on dogs since 1894. The steps in the operation are to open the chest, admitting as little air as possible, to tie the mass so as to make the tissues solid, to use a narrow-bladed clamp and cautery and return after unclamping, and to close the wound by continuous sutures for the pleura and parietes. The danger is hemorrhage. After two to four weeks the scar at the surface of the lung is difficult to find. Experiments on man might be performed on condemned convicts.

For the surgical cure of pulmonary tuberculosis Turban³ proposes, instead of thoracotomy, an operation less severe and less likely to infect the pleura. A portion of each rib is resected in the mid-axillary line without injuring the pleura, but the periosteum is removed. The object aimed at is to reduce lung space by contraction of the thoracic cavity. The same end is also attained by the opposite method of artificial pneumothorax, which distends the thorax.

Intrapleural nitrogen injections, "Murphy's lung rest cure by compression," have been used by Walker Schell⁴ with resulting cessation of pleural pain, fever, sepsis, cough, anorexia, and discomfort. He has also used the method to arrest hemorrhage. The return of respiratory movement in the compressed lung after days or weeks was limited in most cases. Eighty-five cubic inches was the smallest amount injected. The injections were not repeated.

The Hygienic and the Climatic Treatment of Phthisis. The open-air treatment and the treatment in sanatoria have formed the subject of so many writings that it would be impossible to do justice to the latter in the limited space at our disposal; moreover, their substance is familiar to all, for these methods have been under constant discussion for a considerable time. The question of the day is how to place these advantages within the reach of the larger number of sufferers who cannot afford the expenses of travel or of sanatoria.

¹ Therap. Monats., October, 1899; Epitome, British Medical Journal, February 3, 1899.

² New York Medical Journal, June 10; Journal of the American Medical Association, June 17, 1899.

³ Berliner klinische Wochenschrift, 1899, No. 21.

⁴ Indiana Medical Journal, October; Journal of the American Medical Association, November 18, 1899.

Home treatment is the only opportunity available for the majority, and various writers have endeavored to teach us how the modern principles can be carried out even in the humbler habitations. The chief exponents of these views have been Arthur Ransome,¹ W. Osler,² and S. A. Knopf.³

THE HOME TREATMENT. According to Osler, this is the only treatment available for 95 per cent. of cases.⁴ The cure of the disease depends upon food and air. Fresh air, even in large cities, is better than the confined, overheated air of rooms. "Take the almanac and count off the hours of sunshine. In the winter cut off two hours in the morning and one hour in the evening, and for the rest of the day the patient must be out-of-doors." When this is not possible he should be put in a room with southern exposure, and the bed moved in the sunshine, with the windows wide open. A balcony or verandah with a good outlook toward the south should be arranged, or a shelter put up in the yard, at a very moderate cost, where the invalid could sit or recline all day, except only on blustering, stormy, or very rainy days. No degree of cold is a contraindication. In the second place, as large a quantity of food as possible should be given. An excellent plan is to take raw eggs, beginning with one three times a day, and increasing it until twenty to twenty-four a day can be taken. If broken into a cup and sprinkled with a little pepper and salt the egg could be readily swallowed without breaking the yolk.

REST AND EXERCISE in the open-air treatment of phthisis is a theme skilfully handled by Arthur Ransome.⁵ He reminds us of Hilton's great teachings on "Rest and Pain," and of Horace Dobell's anticipation of the principle of resting the damaged lung. The *Liegekur* has, among many recommendations, the following: (1) It increases the body weight; (2) it promotes the absorption of oxygen; (3) it eases the circulation, and thus facilitates the conservation of heat; (4) it lessens pyrexia; (5) it rests the lung.

Exercise is equally necessary, and should be resorted to as soon as the temperature is normal, provided it be so carefully adjusted as to avoid overexertion and the danger of hemorrhage, which is favored by the rise in blood-pressure, followed by a fall during the subsequent period of rest. The passage which he quotes from Walter's *Sanatoria*, p. 38, contains valuable suggestions as to the management of this part of the

¹ British Medical Journal, January 27, 1900.

² Philadelphia Medical Journal, November 25, 1899; Epitome, British Medical Journal, December 16, 1899.

³ Medical Record, January 27, 1900.

⁴ Philadelphia Medical Journal, November 25, 1899; Epitome, British Medical Journal, December 16.

⁵ British Medical Journal, July 22.

treatment: "We may begin with passive motion or very gentle massage, followed by resisted movements in the recumbent position. After this, very gentle walking exercise may be tried, at first restricted to a few yards at a time on level ground. As the invalid gets stronger the length of his walk is gradually increased; he then attempts a gentle uphill walk, and in time he is able to take long walks up even steep hills with advantage. He is, however, never allowed to walk quickly; about two miles an hour is a very good regulation pace for most. He must never put himself out of breath by his exertions, and should stop directly he begins to feel fatigued. Prolonged fatigue, profuse perspiration from the walk, a decidedly raised pulse-rate or respiratory rate, show that the exercise has been too much. If patients come in chilled from their walk, brisk friction with a warm towel, or a little easily digested warm food, will often set them right. With a few exceptions, patients should rest for half an hour or more before every important meal, and for an hour after. The most active exercise is best taken in the morning."

J. A. Knopf¹ reminds us that comparatively few healthy persons expand the chest as they should, while some common affections, especially "adenoids," much interfere with expansion. Hence, the importance of the breathing exercises for all children, especially those predisposed.²

According to Albert Abrams,³ there is an early pulmonary anæmia of phthisis corresponding with "atelectatic zones," which are also the points of election and the paths of distribution of the chronic tubercular lesion. The Röntgen rays assist in their detection. For their treatment voluntary hyperpnoea is not enough. Breathing exercises with compressed air are necessary.

Incidentally we note that deep respirations are recommended as a prophylactic for hepatic colic by M. Möbius.⁴ On the first warning of an attack very slow and deep inspirations should be taken, lasting at least five seconds and retained fifteen to thirty seconds, and these are to be followed by deep expirations, lasting ten to fifteen seconds.

CLIMATE AND SEA-VOYAGES IN THE TREATMENT OF TUBERCULOSIS.⁵ Sir Hermann Weber's practical suggestions are: (1) The importance of warm, sheltered, and sunny places for those whose constitutional resistance is weak. (2) Slight pulmonary affections will tolerate almost

¹ Pulmonary Tuberculosis; its Modern Prophylaxis and the Treatment in Special Institutions and at Home. By J. A. Knopf, 1899. Pp. 343.

² Lancet, November 11, 1899.

³ Medical Standard, Chicago; Journal of the American Medical Association, January 20, 1900.

⁴ Nouv. Montpellier Méd., April 30, 1899; Medical Journal, June 24.

⁵ Berlin Tuberculosis Congress, May 24, 1899; Journal of the American Medical Association, June 17.

any variety of climatic treatment, but fever means rest at home. (3) Extensive disease with slight fever is best off in moderate elevations or warm seaside places. (4) Chronic, slowly progressing cases seem to do best in warm winter climates. (5) Albuminuria, if not due to fever, needs a dry climate without altitude; advanced diabetes with secondary tuberculosis excludes the altitude; moderate diabetes does not. (6) Extensive chronic emphysema needs warm winter places. (7) In most young subjects, but not in older patients, asthma, as a complication, is best suited by altitude. (8) In general, high altitudes are best for tuberculosis; marine climates, including sea-voyages, for scrofula.

The discomforts and dangers of ocean voyages in the stage of active disease cannot be too widely known. We find on this point a consensus of opinion;¹ but John C. Thorowgood² believes in their value if the cases are carefully selected.

THE ŒSOPHAGUS AND MEDIASTINUM.

Rupture of the Œsophagus by Vomiting. Bowles and G. R. Turner³ refer to sixteen cases of this rare event. Their patient, F., aged sixty-two years, suddenly collapsed after vomiting four or five times, and on swallowing some chlorodyne had agonizing pain at the epigastrium and dorsal spine, "as though breaking in two." The respiration was gasping, and the upper abdomen retracted, rigid, and tender. All vomiting had ceased since the collapse. She was quieted by morphine, the symptoms not affording indications for laparotomy. Emphysema of the face and neck occurred in eighteen hours, and death ensued twenty-two and a half hours after the commencement. After death left pneumothorax was discovered, also six ounces of brownish fluid in the left pleural cavity and a small quantity of fluid in the right cavity. The posterior mediastinum was infiltrated with similar fluid. A longitudinal rupture, five-eighths of an inch in length, was found in the œsophagus, one and a half inches above the diaphragm. H. D. Rolleston, in referring to a case in which an abscess in the posterior mediastinum and left pleurisy complicated the rupture, hinted that since the lower third, where longitudinal fibres only occur, and which is more firmly fixed by its attachment to the diaphragm, is the common seat of œsophageal ulcer, the rupture might have been preceded by ulceration; but Cyril Ogle, who had performed the autopsy, was confident that there was no softening of the membrane.

¹ British Medical Journal, December 30, 1899, January 13, 1900.

Ibid., November 11.

³ Revue Méd. Chir. Soc. Mtg., March 7; British Medical Journal, March 31.

If the diagnosis of this lesion from gastric or duodenal perforation, ruptured aneurism, angina, irritant poisoning, etc., can be made, drainage of the posterior mediastinum and suture of the rupture would be justified.

Phlegmonous Œsophagitis and Pericæsophagitis. In Huismann's¹ case of double apex-phthisis and prevertebral abscess, obstruction of the œsophagus, causing dyspnœa and sudden death, was associated with subcutaneous emphysema in the neck.

Œsophageal Ulcer. Non-malignant ulcerations of the œsophagus, with especial reference to simple perforating œsophageal ulcer, is an important subject dealt with by Russell in the *Scotch Medical and Surgical Journal*, April, 1899.² Three cases of chronic mediastinitis are contributed by William Cecil Bosanquet.³

Œsophageal Diverticulum. A deep-seated dilatation was recognized by Landauer⁴ in a man, aged fifty-one years, at a distance of from 36 to 42 cm. from the teeth, by passing down two tubes, one into the stomach, the other into the diverticulum, and introducing eosin and methylene-blue separately through them. The fluids were then withdrawn unmixed. Only four cases quite analogous have been traced by the author.

The Influence of Posture upon Swallowing.⁵ This is important in heart-failures, hæmoptysis, or rupture of aneurisms, any one of which may result from cough induced by bad swallowing. Bed-ridden invalids should assume the lateral decubitus for swallowing.

FOOD AND MEDICINE THROUGH THE NOSE. Salomon's⁶ method is simple and "invaluable in apoplexy, hysteria, eclampsia, insanity, struggling patients, and children." The head is held back and one nostril plugged with cotton-wool; into the other the contents of the spoon are gently poured at the commencement of inspiration; even brandy will not set up cough or spasm. The process is slow, and only concentrated fluids are recommended.

Œsophagoscopy. An ingenious expedient has been devised by George Kelling, of Dresden. A flexible tube is introduced into the œsophagus, and is subsequently straightened and made rigid. This contrivance enables the œsophagoscope and the gastroscope to be handled with much less difficulty. A full description of the apparatus and method will be found in *The Lancet* for April 28th.

¹ Deutsche medicinische Wochenschrift, April 27, 1899; British Medical Journal, June 10, 1899.

² Therapeutic Gazette, June 15, 1899.

³ Lancet, July 1, 1899.

⁴ Centralbl. für inn. Med., April 22, 1899; Epitome, British Medical Journal, October 14.

⁵ Mendelssohn and Gutzmann. Medical News, June 17, 1899.

⁶ Presse Médicale, January, 1900; Journal of the American Medical Association, February 4, 1900.

Œsophageal Strictures. The management of œsophageal stricture or recent corrosion is much simplified by G. Krönig's method, which had long previously been used by Fürbinger.¹ Warm oil (20 to 30 c.cm.), when it is injected through a soft Nélaton catheter to the level of the second fourth, passes down without any act of swallowing, and prepares an easy way for a tube, for watery fluids, or for air. Air to inflate the stomach can almost always be injected without passing the tube beyond the cardia. The distress and risks of the œsophageal sound are thus largely done away with, and the passage is kept clear by the soft or liquid food which the patient is enabled to swallow.

More recently œsophageal stricture has also been successfully treated by Pyle² by means of an ingenious tubular dilator into which warm water is forced after introduction through the stricture.

CICATRICAL STRICTURE AND ITS TREATMENT. Mayo³ discusses stricture of the œsophagus, chiefly from the surgical stand-point, and he describes two methods: (1) Abbe's string-saw method, which was first introduced some years ago, and (2) Ochsner's method—a whalebone probe carries a threefold silk loop (the third or end length acting as a guide) either down the œsophagus or through a gastric opening up the œsophagus—the loop carrying along with it a loop of soft, small, rubber drainage-tube. As this loop is dragged along it will be drawn thinner until able to pass through the obstruction, and the traction being released will tend to distend it, while its free ends, for these must be of sufficient length, will enable it to be worked to and fro by pulling alternately upon them and upon the silk.

THE PERICARDIUM.

Surgical Treatment of Pericarditis. Free access to the heart for the treatment of wounds and of pericarditis is at last within sight, but our two most promising operations have yet to be tested on the living subject. E. Rotter⁴ raises the parietes in the shape of a square door hinging at the sternal insertions of the costal cartilages, which are dislocated. The horizontal incisions run along the edges of the third and fifth for 10 cm. At that distance the ribs are sawn through, opening the pleura. The fourth and fifth intercostal arteries are ligatured and the pericardium incised diagonally, after which the heart can be lifted for examination and sutured.

¹ Deutsche medicinische Wochenschrift, 1899, Nos. 40 and 44.

² Philadelphia Medical Journal, February 5, 1900.

³ Journal of the American Medical Association, July 29, 1899.

⁴ Münchener medicinische Wochenschrift, January, 1900; Journal of the American Medical Association, February 24, 1900.

A less severe and more artistic operation described by Cyril Ogle and Allingham¹ does neither more nor less than is wanted, and its merits will be obvious to surgeons. (1) The line of incision in Dr. Ogle's ingenious method is about three lines in length, with its upper end at the costo-xiphoid angle, and follows the lower edge of the seventh left costal cartilage; the latter is then exposed by separating the abdominal muscles from it; the cartilage can then be pulled somewhat outward and upward, when the fibres of the diaphragm become visible, together with the cellular interval between its attachments to the cartilage and to the xiphoid appendix. (2) This cellular interval is enlarged by cut-

FIG. 5.

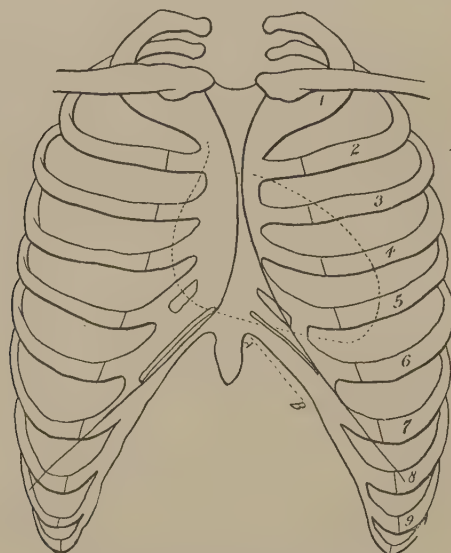


Diagram showing line of incision.

ting or tearing through the muscle of the diaphragm as far as may be necessary, when a mass of fat is usually seen just above the diaphragm, in the space between the pericardium behind, the sternum in front, and the diaphragm below. (3) This fat, together with the diaphragm, is pulled downward, when the pericardium presents itself and can be incised or opened up with forceps. The peritoneum is avoided, but may come into view. The superior epigastric artery is left well toward the middle line. The opening provides a perfect drainage from the most dependent part, and an easy access to the back as well as to the front of the heart.

H. Lilienthal's² case of successful operation for *purulent pneumococcal*

¹ Lancet, March 10, 1900.

² New York Medical Record, November 25; Lancet, December 23.

pericarditis, in which 40 ounces of pus were removed from the pericardium of a boy, aged fifteen years, demonstrates the inadequacy of mere aspiration. Although $18\frac{1}{2}$ ounces had been aspirated the previous day, the cyanosis was such that only local anæsthesia (1 drachm eucaïne-β, 6 per cent. solution) with morphine (Magendie's solution, 10 minims) could be used. A portion (three-quarters of an inch) of the fifth costal cartilage was removed close to the sternum. The patient made a rapid recovery.

Dilatation of the Pericardium. James H. Sequeira¹ suggests that in a pericardium softened and dilated by inflammation the protective support afforded, according to Barnard and Leonard Hill, to the myocardium during strain would be lost, and the heart would dilate and fail at once, and if adhesion to the chest-wall should occur, compensation must break down, although this need not follow if the adherent membrane be undilated. The after-history of 130 cases of acute pericarditis and with personal examination of 1000 point to the importance of dilatation of the pericardium in the remote prognosis of acute pericarditis.

Wounds of the Heart and Pericardium. Loison's² exhaustive monograph should be consulted for an extensive collection of cases of punctures, stabs, gunshot wounds, and contusions with rupture. The uncertainties of diagnosis and prognosis are comparable with those of wounds of the peritoneum and of the abdominal viscera, and surgery is by no means hopeless in a proportion of the cases.³

Minni's⁴ contribution to the same subject deals with eight cases treated by suture. He finds that only 19 per cent. of the cases of penetrating wounds of the heart are immediately fatal.

Ophüls,⁵ at the autopsy of a man who died of phthisis, found, embedded in scar tissue in the upper part of the interventricular septum and slightly projecting into the left ventricle, the end of a trochar needle. This must have been broken off at some previous operation for paracentesis or exploration.

SUTURE OF WOUNDS OF THE HEART is regarded by Elsberg⁶ as a justifiable operation. Manipulation of the heart is free from danger of arrest of the cardiac action both in animals and in man, provided Kronecker's co-ordination centre is not injured. The sutures passed

¹ British Medical Journal, June 17.

² Revue de Chirurgie, January, February, June, and July, 1899.

³ Epitome, British Medical Journal, September 2, 1899.

⁴ Giorn. Internaz delle Scienze Med., January 15, 1899; Epitome, British Medical Journal, September 30.

⁵ Occidental Medical Times, August 15, 1899; Epitome, British Medical Journal, January 27.

⁶ Journal of Experimental Medicine, vol. iv., Nos. 5 and 6.

through the epicardium and through the superficial layer of the myocardium should be tied, if possible, during diastole.¹

THE SURGERY OF THE HEART, its prospects, its present difficulties and dangers, are dwelt upon by Podrez,² of Kharkoff. His article refers mainly to surgery necessitated by wounds of the heart.³

PHYSIOLOGY AND PHYSICAL EXAMINATION OF THE HEART.

Demonstration of the Movements of the Human Heart. A fortunate opportunity presented itself to Rivalta⁴ of vivisectioning a five-months' fœtus, which was apneic and exanimate. The thorax and pericardial sac having been opened widely, the heart continued beating under observation for eight minutes, at first twenty-four times, then seventeen times per minute. Starting from the pause, the right auricle contracted first, and immediately afterward the left, both from above downward; after a very brief pause (the auricles still being in systole) followed the contraction of the right ventricle, immediately succeeded by that of the left ventricle. The contractions of the four cavities were, therefore, not isochronous. The cardiac impulse commenced with the ventricular systole, and reached the maximum at the height of the systole—that is, when the ventricle was empty. Probably the amount of blood in the ventricular cavity has little to do with the production of the impulse; it is almost entirely an affair of muscular contraction of the ventricular fibres. This fœtal heart was practically bloodless, yet it behaved precisely like an ordinary heart as regards impulse, rotation on the longitudinal and transverse axes, rise of the apex, and depression of the conus and base of the aorta. The mode of cessation could not be watched, owing to duties to the patient.

Schuster's⁵ X-ray studies of the heart confirm Benedict's observation that in the absence of adhesions or of cardiac enlargement the heart during inspiration does not rest upon the diaphragm, but seems to be supported by the great vessels. He has been able to follow the movements of the heart. It is also possible to trace sclerosis of the coronary arteries, persistence of the ductus arteriosus, and the early stages of aortic aneurism.

The Varying Capacity of the Heart. At the Gesellschaft der Aertze, Professor Heitler gave the results of his laboratory experiments

¹ Therap. Gazette, March, 1900.

² Rev. de Chir., May, 1899.

³ Epitome, British Medical Journal, June 3.

⁴ Revist Crit. di Chir. Med., An. 1, No. 8; Epitome, British Medical Journal, March 24.

⁵ Therap. Monats., August, 1899; Epitome, British Medical Journal, November 4.

on the variable volume of the heart. He used a pericardial sac as a plethysmographic chamber. The heart alters in volume, when in a normal condition, by simple blood-pressure. The increase is produced sometimes on the right, sometimes on the left, and often on both sides, by blood-pressure alone. Dilatation of the heart is caused by compression of the aorta or vena cava, or by irritation of the pericardium, or of the vagus nerve and accelerans, as well as by subcutaneous injections of the ordinary salt infusion.¹

THE VENTRICULAR SYSTOLIC REMNANT. A. Stefani's² observations on dogs, with the help of fistulæ and of the cardiograph, prove that after each systole some blood remains in the ventricles, and that this remainder is increased with increasing pressure or overwork. It is also increased by dyspnœa and diminished by venesection. Stefani leaves us in doubt as to whether the blood residuum is or is not beneficial. He inquires whether the value of venesection in pneumonia may not consist in a diminution of the residual blood.

The Vagus Protects the Heart. Stefani³ also recognizes in the inhibitory function of the vagus, which by lengthening the diastole favors constructive metabolism in the heart, a mechanism of protection against the three chief causes of exhaustion—excessive arterial pressure, high temperature, and dyspnœa. Against undue arterial pressure the vagus centre is stimulated directly by the rise in pressure and indirectly through the depressor nerve. In dyspnœa the impure blood, which is no longer adequate to restore strength to an exhausted muscular system, stimulates the vagus centre of inhibition, thus reducing the amount of oxygen required by the heart and enabling it to last longer under restricted oxygen supply. The stimulating effect of elevation of temperature may be studied in irrigations of the exposed medulla with hot and cold physiological solutions. These observations explain that the combination of a high temperature with a fairly slow pulse is relatively favorable as compared with a rapid pulse coupled with a low temperature.

Arhythmia. The frequency of this condition and our ignorance of its causation more than justify a mention of Professor Heitler's⁴ discovery that in the dog mechanical or electrical stimulation of the visceral pericardium considerably disturbs the cardiac rhythm, even after section of all the cardiac nerves, except when the heart is painted with cocaine. The upper third of the longitudinal sulcus is the most excitable region. The left ventricle is excitable, especially over the upper

¹ Medical Press and Circular, March 14, 1900.

² American Journal of the Medical Sciences, June, 1899.

³ Gaz. degli Osped. Clin., July 16; Journal of the American Medical Association August 19.

⁴ Wiener klinische Wochenschrift, 1898, No. 3.

third; the right ventricle is not markedly excitable except close to the sulcus. The excitability of the apex varies. These data will probably find their application in clinical medicine.

The X-rays. Freund,¹ of Vienna, mentions Kienbock's work in von Schrötter's clinic on diseases of the lungs and on the changes in the heart observed after hard cycling, and in the Schott treatment.

In a more recent article² F. H. Williams adduces additional evidence and several skiagrams. The X-ray method has given him more reliable results than percussion, and has demonstrated the fact, well known to us, but difficult to verify by percussion, that during a full inspiration the heart is more vertical, with relative diminution in the transverse diameter of the cardiac dulness.

The Cardio-oesophageal Gush and Click. These sounds, sometimes mistaken as endocardial, are attributed by R. G. Curtiss³ to rhythmic pressures upon the oesophagus by the diastolic filling of the heart by air and moisture in the tube. They are most audible during expiration with the mouth open, faintly also over the mid-sternum, but not over the stomach.

Percussion. The fallacies of heart percussion as it is sometimes performed are shown up by the X-ray test. Hauser⁴ dwells upon this in a thoughtful paper on "Apparent Idiopathic Enlargement of the Heart in Children." Cases are narrated in which the heart's dulness had extended laterally beyond the normal boundaries, but in which the Röntgen ray showed that the assumed cardiac enlargement did not exist. The level of the diaphragm had risen, and the heart was less vertical, and, therefore, broader as viewed from the front. In all the patients (nine to fourteen years old) there were generally objective and always subjective signs of cardiac disturbance. For instance, in a boy, aged eleven and a half years, irregularity of the pulse had existed for six and a half years; it was promptly cured by suitable treatment. Imperfect expansion of part of the left lung is another source of the same fallacy.

THE LEFT AURICLE DULNESS. Clinical importance attaches to the "post-cordial dulness" elicited by percussing the back over the area corresponding to the situation of the heart; but inasmuch as it was described by Piorry,⁵ the attention recently devoted to it by Ewart⁶ ("The Practical Aspects of Dorsal Percussion, and in Particular of the

¹ British Medical Journal, Epitome, November 25.

² Philadelphia Medical Journal, January 6, 1900.

³ Medical News, New York, September, 1899; Journal of American Medical Association, September 16.

⁴ Berliner klinische Wochenschrift, July 3, 1899; Journal of the American Medical Association, November 18.

⁵ Traité de Plessimétrisme, 1866, p. 248.

⁶ Lancet, 1899, and International Medical Magazine, September, 1899.

Percussion of the Spine") possesses merely a revived interest; but a new departure is made in connection with the percussion of the left auricle—a structure which, it is well known, lies far back in the chest in contact with the spine. Ewart¹ points out that this contact is the source of the dullness of the ninth dorsal vertebra. The "*ninth spine dullness*" is merged in the normal "left auricle dullness," which, though of moderate size, is singularly definite and easy to obtain. The prognostic significance of an extension of the left auricular dullness in mitral stenosis is pointed out in a paper by the same author on "The Relation of Enlargement of the Left Auricle by Percussion," etc.²

Cardiac Murmurs and Sounds. A knowledge of the relative intensity of the normal second sounds at the base of the heart is essential to diagnosis. The normal intensity varies in different individuals, partly according to their ages. Dr. Sarah R. Creighton,³ from an examination of 100 cases, has concluded that between the ages of twenty and thirty years the pulmonary and the aortic sounds have equal intensity; before that age the pulmonary sound is the louder, and after that age the reverse obtains.

Albert Abrams⁴ has also set himself the task of measuring the heart-sounds. One method consists in determining the distance to which the heart-tones are propagated along definite routes on the chest; another, in interposing between the stethoscope and the chest-wall a soft rubber rod of varying length, the tones gradually becoming less distinct as successive rods of increasing length are employed.

The order in which the tones cease to be heard is as follows, beginning with the weakest tones: First aortic, first pulmonary, second tricuspid, second mitral, second aortic, second pulmonary, first tricuspid, and first mitral tone.

The level beyond the hepatic region at which the cardiac tones are no longer audible marks the lower border of the liver.

The apparent reduplication of the second sound in mitral stenosis is regarded by Villani⁵ as arising from a second vibration of the abnormal mitral valves, possibly due to impact of blood.

Retarded or disturbed papillary contraction is discussed in its clinical aspects by Henry Sewall,⁶ who attributes to it the reduplication of the first sound at the apex.

Accidental heart murmurs are studied from the stand-point of etiology

¹ Loc. cit.

² British Medical Journal, October 28, 1899.

³ Medical Record, January 13.

⁴ Medical News, New York, July 8; Journal of the American Medical Association, July 15, 1899.

⁵ Il Policlinico, May 1, 1899.

⁶ Philadelphia Monthly Medical Journal, September, 1899.

and diagnosis by George W. Webster,¹ who argues that they are all due to fluid veins.

The transmission of systolic mitral murmurs and the distribution of the so-called anæmic murmurs are ably dealt with by Horace D. Arnold,² of Boston.

We owe to Maude Abbott³ a valuable statistical record of functional heart murmurs, from a series of 466 cases. Foxwell's views as to the mode of production of the murmurs of anæmia deserve careful perusal.

D. W. Samways⁴ dwells upon the fact that the defence of the cardiac orifices is not merely valvular, but largely depends upon the muscular contraction of the auricle. If this contraction be kept up during the ventricular systole no regurgitation will be possible, though the valve be incompetent, as is often the case in mitral stenosis. At a more advanced stage the auricle fails to empty itself thoroughly, owing to imperfect contractile power; regurgitation and a systolic murmur will then occur in addition to the murmur of mitral stenosis. The latter might be fairly regarded as an early systolic murmur, since the auricular systole runs into and is continued through part of the period of the ventricular systole.

Hamilton⁵ describes a case of aortic disease with anomalous signs due to aberrant chordæ tendinæ. This lesion had been previously identified clinically by Huchard.⁶

The presystolic murmur in aortic valvular incompetence is often due to a purely functional mitral stenosis, the anterior mitral flap being pushed back toward the orifice by the regurgitant stream from the aorta. Golbi⁷ has attempted the difficult task of differentiating it clinically from the presystolic murmur of mitral disease: (1) There is an absence of accentuated or reduplicated second pulmonary sound, hypertrophied right ventricle, or impeded pulmonary circulation; (2) the aortic presystolic murmur is not conducted downward, but rather upward, and is heard best in the fourth intercostal space, instead of at the apex. My own observations do not confirm these distinctions as invariably trustworthy. I have even known extensive pulmonary apoplexy occur.

Ferrannini⁸ has endeavored to set at rest the disputed question as to atrophy or hypertrophy of the left ventricle in mitral stenosis, which is a stumbling-block to the student. He employed Rummo's volu-

¹ Boston Medical and Surgical Journal, July 6, 1899.

² Ibid.

³ Montreal Medical Journal, January, 1899.

⁴ British Medical Journal, October 28, 1899; Journal of the American Medical Association, November 18.

⁵ Montreal Medical Journal, July, 1899.

⁶ Rev. de Med., 1893.

⁷ Gaz. degli Osped., October 1, 1899.

⁸ Arch. Ital. di Med. Int., vii., f. 36; Epitome, British Medical Journal, February 17.

metric method in twenty-nine cases of mitral stenosis, both complicated and uncomplicated with other cardiac lesions, and found in all an enlargement. He considers this to be due: (1) To sympathy with the overworked right ventricle; (2) to struggle with a peripheral resistance due to the well-known diminished capacity of the arterial system, or (3) to the myocarditis incidental to this as well as to other forms of heart disease.

A *pseudopericardial friction* may, according to N. Ortnier,¹ be set up by peritoneal exudations or roughness. This friction is generally heard loudest or exclusively to the left of the sternum, while pericardial friction is more distinct at the base. The sound may be either double or systolic only.²

DISEASES OF THE ARTERIES AND THEIR TREATMENT.

Spontaneous Gangrene. In Raynaud's disease all the vessels except the smallest are patent; but spontaneous gangrene following infective diseases is, at any rate in children, according to Zuppinger,³ almost always due to arterial thrombosis.

Congenital Atheroma of the Pulmonary Artery, with Fatty and Calcareous Change. Durante⁴ records a case in an infant born at seven months, who died when barely two months old, and contrasts by its rarity the frequency of acquired aortic atheroma.

Acute and Chronic Aortitis. The clinical recognition of chronic aortitis with dilatation and induration, so common in aged male patients, rests upon a determination of an increased "prevascular dulness" at the upper sternal region. *Acute aortitis* is seldom looked for or recognized. Poynton's⁵ two cases were coupled with much myocarditis, and ended in sudden death after breathlessness and syncopal angina. It is of practical interest in all countries afflicted with malaria, as the frequency of arterio-sclerotic changes has been ascribed, at Baltimore, to that cause.

THE TREATMENT OF AORTITIS. Charles F. Hoover⁶ advises the use of potassium iodide and nitroglycerin. "Digitalis, strophanthus, and strychnine are positively harmful."

MALARIAL AORTITIS. Potain⁷ relates the case of a young soldier, who had suffered for nine months from malaria and diarrhoea, and in

¹ Wiener klinische Wochenschrift, June 29.

² Journal of the American Medical Association, July 29, 1899.

³ Wiener klinische Wochenschrift, November 13, 1899.

⁴ Bull. de la Soc. de Anat., January, 1899.

⁵ Lancet, May, 1899.

⁶ Columbus Medical Journal, June 27, 1899; Journal of the American Medical Association, July 22.

⁷ Bull. de l'Acad. de Méd., July, 1899; Journal of the American Medical Association, August 26, 1899.

whom the extensive aortic dulness, together with the fever, gradually yielded to quinine. Lancereaux¹ had previously reported sixteen cases, to which he now adds twenty-one. Aneurism, angina, dyspnœa, or dysphagia, rupture of the aorta, suffocation, or slow cardiac failure occurred in those cases which were misdiagnosed as syphilitic or overlooked. In the less advanced stage hydrotherapeutic treatment and iodide of potassium are beneficial, or in the aneurismal cases gelatin injections (250 c.c. of a 2 per cent. artificial serum) every fifth or eighth day.

TUBERCULAR INFECTION OF THE INTIMA is reported in a third case by Blumer.²

Aortic Aneurism. H. A. Hare and C. A. Holder's³ exhaustive review of this subject deserves fuller notice than our space will admit. Important facts are brought out: (1) Most of these growths are saccular rather than fusiform; (2) of nearly 1000 cases analyzed, in no fewer than 570 the ascending arch was involved, the transverse portion only in 104 and the descending portion in 110; (3) of the 570 aneurisms of the ascending arch only 78 occurred in females, and only 26 (all occurring in males) were fusiform. Many other interesting points are made, and among the authors' remarks we note that in a large proportion of cases death did not ensue from rupture, but from pressure effects, and that syphilis did not enter so largely into the etiology as is usually supposed.

The aneurism of the root of the aorta described by B. Rogers,⁴ in a girl, aged ten years, was really one of vegetative valvulitis leading to a small aneurism one-half inch above the valve.

T. Churton⁵ reports a case of aortic aneurism with a most unusual presentation, namely, into the right axilla.

Rupture of an aneurism into the œsophagus, without any marked premonitory symptoms, is reported by F. Torgood.⁶ Similar cases have often been observed.

THE DIAGNOSIS OF AORTIC ANEURISM. An X-ray examination⁷ should be made with the screen and radiograph. As a normal upper thoracic skiagram is conclusive against aneurism, and where aneurism is manifest, we can determine its extent and whether or not the aorta itself is involved and an operation useless.

Tracheal tugging is a more reliable test between new-growth and aneurism in cases of abnormal upper thoracic dulness, when, as sug-

¹ Bull. Acad. Med., July 4; Journal of the American Medical Association, August 5.

² Albany Med. Ann., May, 1899; Med. News, June 24.

³ American Journal of the Medical Sciences, October, 1899.

⁴ Pediatrics, August 15, 1899, vol. elviii.

⁵ Lancet, October 21, 1899.

⁶ Ibid.

⁷ Boston Medical and Surgical Journal, January 25.

gested by J. N. Hall,¹ a sharp "*diastolic shock*" follows the tracheal tug. This is wanting in the simple up-and-down pulsation of the trachea observed in some normal subjects.

Tracheal tugging is also studied by A. Fraenkel,² who regards it as a reliable, though not exclusive, sign of aneurism of the arch.

The *diagnosis and prognosis* are commented upon by Sir William Broadbent³ in a case of aneurism of the first part of the arch. Aneurism of the second and third divisions of the arch lying beyond the reach of physical examination, but setting up various pressure effects, may be termed "*aneurisms of symptoms.*" Those of the ascending portion are "*aneurisms of physical signs.*" The physical signs in this case were (1) slight general heaving of the right chest, (2) gentle pulsation in the third right interspace, more palpable during expiration, (3) diastolic shock. The sharp vibration felt as the heaving pulsation subsides and coinciding with the accentuated second sound at the same spot is one of the most conclusive signs of aneurism. It is not present over a pulsating malignant tumor. (4) A smooth, low-pitched systolic murmur; but murmurs scarcely enter into the diagnosis. Very common from other causes at the valves, or from roughness of the walls of the vessel, they are often absent in aneurism. The one condition in which a murmur is diagnostic is when, there being no murmur in the right second space or over the right carotid, a murmur is developed in the course of the aorta, and is heard to the left of the manubrium and in the left carotid. (5) There was also in this case a smaller radial and carotid pulse on the left side.

FIG. 6.



The *prognosis* was regarded as favorable on the following grounds: (1) The situation was such as not to give rise to pressure upon any important structure. (2) There was evidence of slight aortic regurgitation, and in Sir William Broadbent's experience this exercises a favorable influence in spite of any theoretical conclusions to the contrary. (3) Percussion seemed to show that while the sac was of some size the

¹ American Journal of the Medical Sciences, January, 1900.

² Deutsche medicinische Wochenschrift, 1899; Epitome, British Medical Journal, July 1.

³ British Medical Journal, December 2, 1899.

neck was comparatively narrow, for there was good resonance in the second intercostal space close to the sternum.

Paradoxical as it may appear, there is a better chance of cure of a large aneurism than of a small one. This will be understood by a glance at Fig. 6. In the first, where the sac is small, the communication with the artery is relatively large, and the blood current will sweep through the aneurism and effectually prevent the deposit of fibrin. In the other the blood contained in the aneurism is withdrawn from that which is rushing along the aorta, and is comparatively stagnant, favoring the formation of a laminated clot. The treatment is rest in bed for six weeks, dry diet, and the administration of iodide of potassium in considerable doses.

THE TREATMENT OF ANEURISM. We are now in possession of three lines of treatment, the medicinal and dietetic, which aim at reducing the patient and the disease; the electrolytic and the gelatin treatment, both of which aim at coagulation, and both of which do the work rapidly and without interfering much with the diet. They would naturally be preferred, but there is not generally a free choice; some cases being unsuitable, and it is an anxious question which will answer best.

We have seen the best and the worst features of the *Tufnell plan*. In general I regard with suspicion any treatment which aims at curing disease by lessening nutrition. Nevertheless, successful cases have been reported, and there must be cases in which this is the wisest course.

In Laache's¹ patient, aged forty-eight years, the aneurism was of four-years' standing. Tufnell and Bellingham's plan was tried, and the diet was reduced to about half that normally taken. At the same time increasing doses of sodium iodide were given and ice was applied to the chest. The body weight fell from 64 kilos to 52.5 kilos, while the strength increased. After returning to his work he was again obliged to resume the treatment, and a third relapse proved fatal. The greater part of the aneurism was obliterated and filled with old, brownish-black blood.

Iodide of potassium does good by its influence upon the diseased membrane rather than the blood, and upon the blood-pressure at the periphery rather than at the seat of the tumor. In my experience it does not lead to coagulation, but the reverse.

Electrolysis is recommended by its success in H. A. Hare's² cases. A patient previously cured is reported to have died from a second aneurismal growth. The present case was treated by two applications in which at one sitting twenty feet of gold wire were left in the aneurism.

¹ Norsk. Mag. for Lægevidensk, February, 1899, No. 2; British Medical Journal, April 22, 1899.

² Therap. Gaz., January 15, 1900.

No one reading Prof. Hare's paper and seeing the illustration can doubt that a great success had been achieved.

Bacelli's treatment, viz., the introduction of a watch-spring into the sac, was practised by F. Mariani¹ in the case of a large aneurism (5 x 15 x 17 cm.) four hours after the removal of 200 c.c. of blood and the simultaneous injection of a 2 per cent. gelatin solution. Death ensued eight days later, with pressure symptoms. The pieces of the spring, which breaks as it becomes oxidized, were the nucleus of heart coagula about 5 cm. in diameter. This part of the result was considered to be highly satisfactory.

The Hypodermatic Injection of Gelatin. Above all, it must be borne in mind that risks attend this treatment, and that the fatal accidents recorded may occur again in spite of our precautions. Moreover, minor complications and discomforts often follow the operation. Nichols'² paper calls attention to these points and supplies a bibliography. Fatalities and failures should be published as completely, if possible, as successes. Of the latter we may quote the following instances:

A large aneurism of the arch was cured by Kalindero³ by five injections of 100 c.c. of a saline solution containing 1 gramme of gelatin administered at intervals of one week. Slight pyrexia followed each injection.

Fränkel⁴ treated successfully an aortic aneurism with two large, bulging sacs and some erosion of the sternum. After several 1 per cent. injections, given twice a week, the sternum ceased to bulge, and one of the two sacs disappeared and could no longer be traced with the X-rays. Aperient medicine and rest in bed were the only other means employed. The injection was painful, but not so painful as a 2 per cent. solution.

At the same meeting Klemperer referred to two cases, one of which gave doubtful results after eight injections; in the other the condition was such as to forbid a continuance.

In Geraldini's⁵ four successful cases, including an aneurism of the innominate and one of the abdominal aorta, treated by daily 2 per cent. injections, there were no ill effects except a slight, transient, burning sensation, and in one case slight albuminuria, for which the treatment was suspended for four days. No restrictions were made in the diet, and recumbency was not enforced. Three of the cases had numer-

¹ Gaz. degli Osped., Milan, May 21 and 28; Journal of the American Medical Association, June 24.

² Medical News, vol. lxxv., No. 25.

³ Arch. Orient. Méd. et de Chir., October; Journal of the American Medical Association, November 25, 1899.

⁴ Verein für inn. Med., April 24, 1899; Medical News, June 17.

⁵ Gaz. degli Osped., February 4, 1900.

ous injections (forty, forty-five, and sixty); but the fourth refused to continue the treatment to the end, finding himself so much improved.

We may conclude from these and other reported successes that the treatment is likely to gain ground until a better one is discovered. Meanwhile the danger from imperfect sterilization, or from using too strong a solution, is so great that it is greatly to be desired that, at any rate, in large towns a reliable supply of known strength should be always available for emergencies.

*The internal administration of gelatin*¹ has been tried by various observers, and also by myself, with encouraging results where the circumstances did not recommend injections. J. Buchholz² reports upon this method, used in a woman, aged thirty-five years, the bearer of an aneurism as large as the fist, situated in the epigastric part of the abdominal aorta. She was kept absolutely at rest, with an ice-bag night and day, and a 10 per cent. solution of gelatin in normal salt solution was administered, in addition to drugs for the anorexia, insomnia, and tympanites. After two months the gelatin was given on alternate days and the ice-bag worn only two hours a day. Meanwhile there had been great shrinkage of the tumor. The gelatin was continued for another month, and the patient was then able to return to work. In a case of aneurism of the ascending part of the arch, which I treated for many weeks by this method, with good results, the amount of gelatin used was considerable. It was generally taken hot, in the liquid form, although some patients prefer it as a jelly; in both cases it is flavored to suit the taste.

In some cases consolidation of the tumor seems to be almost unattainable, and the rest-cure will prolong a life which local interference might shorten; but where we feel that the latter is justified our various means of promoting coagulation might be tried in combination, as was done by Mariam. If electrolysis is contemplated arrangements might be made for a simultaneous gelatin injection of reduced strength; or the patient might for some days previously be largely fed with gelatin jelly, or the same gelatin feeding might be used as a preparation for the treatment by injection.

Lastly, no harm could possibly arise from adding gelatin to the scanty diet of patients undergoing the simple rest-cure, though we should not expect much result if the patient was taking at the same time iodide of potassium, which rather tends to keep the blood fluid.

Arterial Thrombosis and Intermittent Claudication. Intermittent claudication was described in horses by H. Bouley (1831), and in man

¹ Epitome, British Medical Journal, March 10, 1900. •

² Norsk. Mag. for Laegevidensk., February, 1900, R. 4, Bd. xv., p. 176.

by Charcot (1858). Karl Grassmann¹ observed it in a man, aged sixty years (syphilitic, alcoholic, and arterio-sclerotic), who also had attacks of arterial thrombosis. One year after commencing in the left leg the following symptoms appeared in the right leg: Sometimes, but only when walking, he was seized with severe pains in the legs, which quickly disappeared when he rested. He had cutaneous paræsthesiæ, and more or less disturbance in the circulation and nutrition of the peripheral parts of the legs. In other respects the nervous system appeared to be normal. The decided improvement derived from iodide of potassium, massage, and electricity was not permanent.

Abnormal Blood Tension and Its Treatment. SENILE RESTLESSNESS is a serious affliction to the sufferers and an almost worse affliction to their friends. The patients during the day are never quiet. During the night they are not only sleepless, tossing and turning about, but dyspnœa often drives them to sit up in bed or in a chair, and they rise in the morning unrefreshed and unrested. Clement Dukes² attributes this condition to arterial tension from gradual age-failing of the scavenger organs. At any rate, his treatment on that basis has been more successful than that by carminatives, sedatives, or digitalis, which merely aggravate the condition, or by mercurials, which relieve, but often depress the aged. The remedies which bring calm and peace are those which relieve the arterial tension, such as nitroglycerin ($\frac{1}{100}$ grain), and even better still, because it requires to be taken less often, erythrol tetranitrate ($\frac{1}{2}$ to 1 grain).

THE TREATMENT OF INSOMNIA is promoted by cardiac tonics, but J. B. Bradbury³ regards morphine as sometimes necessary, or paraldehyde and chloralamide, both of which are very useful. In some cases ice to the head promotes sleep and quiets the heart, but in subnormal temperature heat may answer better. In chronic Bright's disease Bradbury recommends chloral hydrate, as it is more successful in kidney disease than in heart disease, where the reduction of blood-pressure is desirable. Morphine and hyoscine hydrobromate under the skin need much watching, and where pain is the cause morphine should be pushed. In cases of neuralgia, locomotor ataxia, etc., the synthetic analgesics, phenazonum or phenacetin, are valuable, as well as in some cases free from pain. Insomnia from pruritus is often relieved by calcium chloride. Erythrol tetranitrate often acts as a charm where sedatives have failed, and rubbing the skin with a flesh-brush induced sleep in one case.

THE TREATMENT OF ABDOMINAL PALPITATIONS. Sir Willoughby Wade,⁴ who ascribes the benefit from the Nauheim treatment to the

¹ Deutsche Arch. für klinische medicinische, 1899, vol. lxxvi., p. 500; Epitome, British Medical Journal, March 10, 1900.

² Croonian Lecture, Lancet, July 15.

³ British Medical Journal, December 2.

⁴ British Medical Journal, June 17.

emptying of the splanchnic circulation into its complementary—the somatic circulation—believes that in cases of abdominal pulsation the splanchnic blood tension is abnormally high. He has obtained remarkable results from the nitrites. A dose of $\frac{1}{200}$ grain of nitroglycerin may be administered at the time of the attack, or, still better, two or three times a day. The same principle is applicable in many cases of cold feet and hands.

Erythrol tetranitrate has often been favorably reviewed, and Hugh Walsham¹ reports good results from its use in various cases, including painful aortic regurgitation, chronic interstitial nephritis, uræmic dyspnoea, and Raynaud's disease. The drug was generally administered in 1-grain tablets.

Arterial pressure is increased, but *albuminuria* is diminished, according to Bruschini,² by bandaging the lower limbs with an elastic bandage for two or three hours. At first diminished, the secretion of urine returns to about one-third above the normal. Light cases are permanently cured, while severe ones are benefited for a time, and the diminution in albuminuria persists after the removal of the bandages, though arterial pressure has fallen, as it often does, below the normal.

DISEASES OF THE VEINS AND THEIR TREATMENT.

The Entrance of Air into Veins. Two instances of entrance of air into the veins and into the heart during operations are related by Sternberg.³ The first one occurred in a woman, aged sixty-eight years, who survived fifteen days and died of pneumonia; the second in another, aged fifty-five years, who recovered after imminent peril. In both cases loud splashing and gurgling were heard over the heart at each systole, while the normal heart-sounds were absent.

Hübl⁴ describes a case in which death occurred during turning. The left ventricle was flaccid, the right greatly distended and resonant on percussion, and was, in fact, full of air, containing only a few drops of blood.

The Hemorrhage of Hæmophilia and Its Treatment. Hæmophilia is said to be characterized by a tendency to plethora of the small vessels and capillaries and by a capacity for rapid blood-making. George W.

¹ British Medical Journal, November 4, 1899.

² di Renzi's Clinic; Nuov. Riv. Clin. Ther., Naples, No. 5; Journal of the American Medical Association, August 19.

³ Centralbl. für Chir., 1899, No. 11; British Medical Journal, May 27.

⁴ Wiener klinische Wochenschrift, 1900, No. 5; Epitome, British Medical Journal, April 21.

Walker¹ believes that a deficiency of oxygen, perhaps correlated with an insufficient lung space, is the cause of the slow coagulation. In his experience (two cases) the best means of stopping the hemorrhage is the application of absorbent cotton-wool wrung out in very hot water, and a free exposure to the air. Oxygen locally or inhaled hastens coagulation, he thinks, by swelling the endothelial nuclei of capillaries.

The local application of a gelatin solution as a hæmostatic has been practised by Nichols, with a strength of from 5 to 10 per cent. and with the addition of 0.6 to 1 per cent. sodium or calcium chloride. In recurring hemorrhages of one week's duration in a hæmophilic subject a 10 per cent. solution poured into the wound, which was then packed with iodoform gauze, stopped the bleeding. The same method has also succeeded in hemorrhoids, menorrhagia, epistaxis, and for hemorrhages after nasal operations. Polyakoff has administered gelatin successfully in a case of hæmatemesis from gastric ulcer; but, on the other hand, vesical hemorrhages have not been benefited.

Burchardt,² who had injected several patients for hæmoptysis, has had no deaths, but has not obtained any favorable results.

NAUSEA AS A HÆMOSTATIC. Onimus³ has had his attention directed to nausea as a means of checking hemorrhage by a young phthisical patient, who had discovered a remedy for his hæmoptysis in "going out on the sea" when it was rough; the sea-sickness invariably stopped the bleeding. The usefulness of ipecachuanha is thus explained, and Onimus stopped a profuse menorrhagia by 10 cgm. of Dover's powder, taken every two hours, with the addition of $\frac{1}{8}$ to $\frac{1}{4}$ grain of ipecachuanha. This was continued until nausea was set up, and was also taken every night between the periods. After years of irregularity the catamenia once more became normal.

FATAL HEMORRHAGE FROM A VARICOSE VEIN is reported by Gril-lot,⁴ in a bricklayer, aged sixty years, who died in a state of violent excitement after losing over four pints of blood. A sharp-cut ulcer had opened a big vein with much diseased walls, although the integument around the vein was, as elsewhere on the legs, quite healthy.

EPISTAXIS AND ITS TREATMENT. Besides local, Frederick C. Cobb⁵ recognizes constitutional causes, among the latter being increased tension, plethora from renal disease, anæmia, syphilis, phthisis, and alcoholism. The bleeding-point on the septum should always be treated

¹ The Physician and Surgeon, September, 1899, p. 397; American Journal of the Medical Sciences, February.

² Verein für inn. Med., April 24, 1899; Medical News, June 17.

³ Soc. de Biologie, October 21; Lancet, November 11, 1899.

⁴ British Medical Journal, July 1.

⁵ Philadelphia Medical Journal, November 25.

with chromic acid or the galvano-cautery at a dull-red heat after applying cotton soaked in a 10 per cent. solution of cocaine or suprarenal extract. If the nostril must be plugged, the layers of antiseptic gauze carried along the floor of the nose should not be pulled into the posterior nares, because of the discomfort and of the danger to the ears.

Marcel Natier¹ thinks that irrigations of very hot water or plugging the nares may arrest the hemorrhage, but a radical cure is only obtained by a galvano-cautery, silver nitrate, or chromic acid.

Fedorowitsch² arrests epistaxis by deep expansions of the thorax while seated, with both arms over the head, thus emptying the veins of the head and neck.

Phlebitis and Thrombosis. The liability to phlebitis or thrombosis goes with some acute and chronic diseases which are hereditary, but a direct inherited predisposition is also probable by analogy with atheroma. Roussel³ reports the cases of a mother and her two daughters, all of whom suffered from attacks of infectious phlebitis.

Thrombosis is one of the few dangers to life associated with chlorosis, and occasionally death is rapidly brought about, with cerebral symptoms, by a clot forming in the superior longitudinal sinus. A supposed instance of recovery from this condition was reported to the Pathological Society of London by F. J. Smith.

The relative infrequency of venous thrombosis (below 2 per cent.) in chlorosis (O. Leichtenstern,⁴ 0.66 per cent.; Eichhorst, 1.6 per cent., and Von Noorden, 2 per cent.) is attributed by Leichtenstern to its depending upon three factors which are not always combined: (1) A damaged intima, (2) a weak heart's action, and (3) an increased destruction of the figured elements of the blood, with liberation of their fibrin ferments.

Gout is a fertile cause by modifying both the blood and the vessel-wall. The treatment is partly that applicable to all varieties of phlebitis and partly that special to the gouty state, including mineral waters and diet—a subject which belongs to another section.

Syphilis, which exercises a damaging effect upon the arterial lining, may also attack the venous system. Chiari⁵ has observed three cases of obliterative phlebitis of the great hepatic veins (of which only seven other cases are on record), due, he believes, to acquired syphilis, and C. W. Chapman⁶ describes a case of obstruction of the inferior vena

¹ Extrait de "La Parole," 1899, No. 8.

² St. Petersburg medicinische Wochenschrift; Journal of the American Medical Association, January 10, 1900.

³ Loire Med., July 15, 1899.

⁴ Münchener medicinische Wochenschrift, November 28, 1899.

⁵ Beiträge zur pathol. Anat. und zur allgem. Pathol., Bd. xxvi., Heft 1.

⁶ British Medical Journal, December 2, 1899.

cava by thrombosis or by pressure from a gumma. Jonathan Hutchinson believes in a syphilitic venous thrombosis, and T. Barlow has noted a case of distention of the veins of the right arm and chest in which recovery followed vigorous antisyphilitic treatment.

The treatment of syphilitic phlebitis consists largely in the administration of iodide of potassium, and we may adopt Jonathan Hutchinson's suggestion to persevere with small doses of gray powder three times a day while administering the iodide in a stomachic mixture containing some aromatic spirits of ammonia.

Five cases of thrombosis of the crural veins after removal of the appendix, due, according to Lennander,¹ to cardiac depression, prolonged recumbency, tympanites, and impeded inspiration, in addition to sepsis, suggest to him elevation of the foot of the bed and subcutaneous saline infusion after every abdominal operation.

Phlegmasia alba dolens in typhoid fever was found by J. M. Da Costa² in 14 per cent. of the 215 soldiers under his care—an enormous increase over the estimation of Murchison, which was 1 per cent. It generally occurred at the end of the fever. Possibly the relaxation of the veins from marching may be a predisposing circumstance. Sir James Paget traced the condition to a phlebitis, but Da Costa thinks the thrombosis is primary, the phlebitis being secondary.

THE TREATMENT OF PHLEBITIS AND OF THROMBOSIS is largely by rest—to the patient, to the limb, and to the clot; the second great principle is elevation; the third is the avoidance and the relief of local and of hepatic congestion. This points to the importance of a moderately purgative plan and of abstention from heating wines and foods. The mechanical support of a bandage is essential during convalescence, and the danger which might attend misguided interference by rubbing or massage is exemplified in the following instance:

Detachment of a thrombus seven inches long and tapering in width from five-eighths to one-fourth of an inch, became impacted at the bifurcation of the pulmonary artery, where it was bent upon itself like a letter S, was the cause of a sudden death reported by A. C. O'Sullivan.³ The clot was probably derived from the saphena vein.

To return to chlorosis, the diagnosis of the dangerous affection sometimes described as *autochthonous sinus thrombosis* is always difficult, but more so when the patient has not been under observation. The symptoms may be at first trivial, and I have twice known the early condition to be mistaken for hysteria. There may be heaviness or agitation, often

¹ Centralblatt für Chir., 1899, No. 19; American Journal of the Medical Sciences, February, 1900.

² Boston Medical and Surgical Journal, March 23-29.

³ British Medical Journal, February 17, 1900.

amounting to delirium, vomiting, and headache, with or without slight paralytic symptoms. Our attention should be at once directed to the condition of the *jugulars*, which may be unequally filled with blood or may be partly thrombosed; the discovery of *choked disks* and of thrombosis in the lower extremity would also assist the diagnosis.

The diagnosis of *secondary sinus thrombosis* is facilitated by the existence of suppuration, as in phthisis, pyæmia, or most often in otorrhœa. Surgical treatment must at once be thought of, particularly in ear disease attended by painful œdema in the mastoid region and in the neck.

The treatment of spontaneous sinus thrombosis must not be despaired of, as cases have been known to recover; but it is unpromising, and surgery is of no avail. While the patient's strength is kept up, bicarbonate or citrate of potassium should be freely administered with iodide of potassium, the bowel relieved by enemata, the head kept high, and the legs dry-cupped and treated with continuous weak mustard applications, to ease as much as possible the intracranial circulation.

There is always danger of a fragmentation of the clot, which in chlorosis is soft and crumbly, and of the *débris* setting up a migrating phlebitis, or a clotting in the right auricle or pulmonary artery.

Medicinally we can do little beyond keeping an open way along the *primæ viæ*. Nevertheless, we may not despair of influencing the clot medicinally by a plan opposite to that adopted in aneurism. Iodide of potassium, so much used in aneurism, is also recommended for promoting the absorption of thrombi. The practice is right; the paradox is of our own making. The iodide is not a coagulant; it tends, on the contrary, to keep the blood fluid. It is, as I stated above, its power of relaxing peripheral vessels and of aiding the lymphatic circulation which are of so much value in aneurism, in spite of the clot formation being antagonized; but for the cure of thrombosis all its properties will tell. The real clotting agents are chloride of calcium and gelatin, and these are contraindicated, although it is said that the larger doses of calcium chloride increase the fluidity of the blood.

The drugs which we may prescribe with confidence are the alkalies, as they promote oxidation and metabolism, assist hepatic and glandular activities, and, therefore, sanguinification, and probably they obviate the tendency to clotting. The vegetable salts of the alkalies are the best for this purpose, and the same indication obtains in our dieting. A vegetable diet will favor the alkalinity of the blood as well as that of the urine, while mineral acids and a meat diet both act in the opposite direction. The same rules, with suitable modifications, apply to the management of gouty phlebitis.

THE BLOOD, THE LYMPH, AND ŒDEMA.

The Blood in Cardiovascular Disease. Stengel¹ describes in *acute endocarditis* a rapid decrease in red cells (60 or even 50 per cent.) with an increase in leucocytes; in *valvular disease* with destruction of blood-pressure sometimes a diminution in red corpuscles, but in marked loss of compensation sometimes a great increase (in one case 500,000 per c.cm.), while in congenital disease polycythæmia may rise to 8,000,000 per c.cm. In chronic disease it is due to a lagging of red cells at the periphery from failing cardiac strength, and also to evaporation (Grawitz). Stengel has observed increased viscosity of corpuscles in cyanotic conditions (as in the blood drawn from a ligatured finger). J. K. Mitchell has shown that corpuscular richness increases after massage, probably owing to a return into the circulation of corpuscles which had "lagged behind" in the tissues.

E. Grawitz's² observations on the influence of brief exposure to cold upon the composition of the blood throw light upon our methods of treatment. In rabbits dipped in cold water the immediate effect is to raise the specific gravity of the blood and serum; this means, according to Grawitz, that the lymph is driven into the tissues out of the capillaries. Subsequent friction and warmth quickly restore the normal specific gravity; from this we may perhaps assume that similar effects result from our therapeutical measures, and we realize that cellular metabolism itself may be directly stimulated.

Leucocytosis. In *appendicitis* Maclean³ diagnosed the stage of supuration, because 19,000 leucocytes were counted instead of 6000 to 9000, and the next two days 22,000, and during apparent improvement 27,000. Operation revealed an abscess. Three similar cases are quoted. In two others with counts of 9600 and 7400 leucocytes only no abscess was found. In the first, however, the appendix was bound down by adhesions, and in the second impacted gallstones were found. Among other instances osteomyelitis was identified (20,000 leucocytes) where rheumatism had been suspected.

Peritonitis in a child was recognized to be non-tuberculous, as the blood-count showed 19,300 leucocytes; but in a case of enlarged, "fluctuating" cervical glands their tubercular nature was shown by a count of 6200 leucocytes, for in tuberculosis there is no leucocytosis.

Cerebral concussion may be diagnosed from hemorrhage causing com-

¹ Proceedings of the Pathological Society of Philadelphia, 1899; Epitome, British Medical Journal, April 14.

² Centr. für inn. Med.; Journal of the American Medical Association, February 10, 1900.

³ Medical News, New York, December 2, 1899, p. 715.

pression, as leucocytosis occurs in hemorrhage within about an hour, and persists for days or weeks.

ALTITUDE AND BLOOD-COUNT.¹ The immediate effect of a rapid ascent by rail through nearly 8000 feet of altitude was an increase of 11.5 per cent. of red cells, increasing three hours later to 14.42 per cent. The descent caused a decrease of 9.56 per cent.

THE PREVENTION OF SCURVY. Experiments made on monkeys by F. G. Jackson and Vaughan Harley² confirm the Arctic experience that fresh vegetables or lime-juice are not alone sufficient for prevention or cure, and suggests that the real cause is the ingestion of ptomaines in salted or improperly preserved meat.

Iodine is recommended for scurvy by Martinord³ as a rapid cure in doses of 4 to 5 minims of the tincture in a small glass of brandy.

CACODYLIC ACID IN ANÆMIA. Philip Zenner⁴ has employed this remedy with success in two cases, injecting from $\frac{3}{5}$ to $\frac{3}{4}$ of a grain daily. The injection is as painless as one of morphine.

Prof. Gautier's formula for hypodermatic use is :

Cacodylic acid	5 grammes.
Saturate exactly with sodium carbonate. Then add :	
Hydrochlorate of cocaine	0.08
Creosote in alcoholic solution	5 drops.
Boiled distilled water	ad 100 c.c.

Each cubic centimetre contains five centigrammes of cacodylic acid.

The Anæmias. **SPLENO-MYELOGENOUS LEUKÆMIA**, with disappearance of the splenic tumor and of the myelocytes, reported by Thomas McCrae,⁵ of Baltimore, seems to be an unparalleled instance of recovery.

SPLENIC ANÆMIA (BANTI'S DISEASE) WITH DIABETES MELLITUS, reported by H. A. Hare,⁶ is also an unique case. An exceedingly pale man, aged twenty-four years, with yellow conjunctivæ, enormous spleen, hemorrhages into both retinæ, a great excess of lymphocytes, but normal total number of leucocytes (averaging about 6000), and red corpuscles varying from 1,000,000 to 2,800,000, developed suddenly excessive polyuria, with 30 grains of sugar to the ounce, three and a half years from the beginning of the illness. He improved under rest, good food, and large doses of arsenic.

¹ A. Mansfield Holmes. Editorial, Journal of the American Medical Association, September 2, 1899.

² Proceedings of the Royal Society, March, 1900; Epitome, British Medical Journal, April 14.

³ Klin. Therap. Wochenschrift, 1899, No. 29, S. 950; American Journal of the Medical Sciences, February.

⁴ New York Medical Journal, March 3.

⁵ British Medical Journal, March 31, 1900.

⁶ Journal of the American Medical Association, December 30, 1899; Lancet, February 10, 1900.

PERNICIOUS ANÆMIA. J. G. Adami and William Hunter¹ regard it as a chronic infective disease, localized to the alimentary tract. An important practical point is that the infection may originate from the mouth, as a mixed microbic invasion.

Treatment of the stomach by lavage and antiseptics, and of the intestine by salol, naphthol, mercury as a subchloride or perchloride, and by injections of the salicylates, are indicated, but most good will be effected in suitable cases by sanitation of the mouth and the removal of all decaying teeth.

A case of recurrent pernicious anæmia under my care illustrates this etiology.² The patient had had eight typical attacks of pernicious anæmia, each ushered in by bleeding of the gums and stomatitis, etc. He recovered completely under suitable treatment directed to the carious stumps and to the stomatitis.

Besides irrigation with copious streams of sanitas or Condy's fluid, I have found the following dentifrice of great service :

R.—Acidi salicylici	gr. x.
Quininae sulphatis	gr. x.
Potassii chloratis	gr. xxx.
Pulvis myrrhæ	gr. v.
Pulvis talc.	ad 3j.—M.

Ft. pulv. To be gently rubbed over the gums or suspended in a pint of water, for use as a mouth-wash.

The treatment by arsenic, originally an empirical, now a rational antiseptic remedy, would be best administered, as cacodylate, by the mouth, and subcutaneously at the same time. Iron has been regarded as useless, but I have found it of great service. It needs to be combined with arsenic or with mercury, or with both, as in the following prescription, in which the amount of arsenic may be progressively increased :

R.—Tinct. ferri perchloridi	℥xv.
Liq. hydrargyri perchloridi	℥xv.
Liq. arsenici hydrochlorici	℥vj.
Glycerini aurantii	3j.
Aquæ chloroformi	ad 3j.

Ft. mist. Sig.—The dose to be taken three times a day.

I lay stress also upon a liberal vegetable dietary, and soups made of mixed vegetables are, in my opinion, preferable to meat extracts and beef-tea.

The natural therapeutic development of these views is that the toxic and probably microbic invasion of the blood should be antagonized, and this has been attempted by William Elder,³ of Leith, in a man, aged

¹ Lancet, 1900, i., pp. 224, 296, 371.

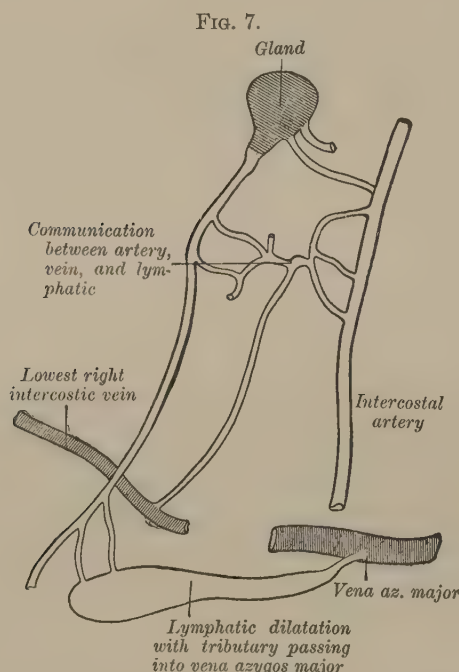
² Ibid., March 10, 1900.

³ Ibid., April 28, 1900.

thirty-five years, with undoubted pernicious anæmia and many decaying stumps. Eighteen *antistreptococcic injections* were made between February 3d and March 19th, and no medicine given except a mouthwash. The blood-count, which was 797,500, with 24 per cent. hæmoglobin, on January 29th, had risen on March 20th to 4,800,000, with 104 per cent. hæmoglobin.

On the other hand, Alfred C. Coles¹ dwells upon the relapses in cases of temporary improvement and upon the ultimate failure of all treatment.

The Connection of the Lymphatic and of the Blood Circulation. This is one of the directions in which clinical progress is retarded by our



anatomical ignorance. The problems as to the secondary deposition of neoplasms, as to the exudation and the absorption of œdema, as to the mechanism of the effects of massage, etc., are instances in point. C. H. Leaf's² dissections demonstrate that in addition to the direct opening of lymphatic trunks into the venæ cavæ, and the portal, renal, axillary, internal iliac, and azygos veins, which has been described by various anatomists, including Stenson and Meckel, communications exist in the thorax between small lymphatic vessels and small veins, and even arteries, an arrangement which must greatly favor the lymphatic circu-

¹ British Medical Journal, March 31, 1900.

² Lancet, March 3.

lation. This important fact will be well understood from Leaf's illustration. (Fig. 7.)

"Lymph often assumes a pink hue, from the presence of red blood-corpuscles. This is now explained, and another factor is added to those which are known to quicken the movements of the lymph, although the arteries do not communicate directly with the lymphatics nearly so frequently as do the veins.

"If the communications can be shown to take place all over the body—and already they have been observed to exist to a very considerable extent—we ought to regard the venous system as no inconsiderable part of the absorbent system. We shall then have a ready explanation of certain facts usually regarded as peculiarities in connection with dissemination of the sarcomata and the carcinomata," and we shall be nearer understanding the mysterious mechanism of œdema.

Œdema. The distinction between "renal" and "cardiac" œdema is highly diagnostic, but their mechanism is mysterious—the former eminently soft, puffy, elastic, and easily controlled by pressure, and partly independent of gravitation; the latter less readily checked by pressure, but always gravitating until it passes from the soft condition into a hard swelling, sometimes resembling elephantiasis. In the terminal stages of heart disease and also of kidney disease both features are often combined.

"*Essential*" œdema, a by no means rare form, is of interest to the practitioner because so puzzling in its diagnosis and treatment. Of still greater interest is its mechanism, which is not that of cardiac or renal failure, yet clearly due to a disturbed vascular function. A variety of this form is the so-called *angioneurotic œdema*, in which a nervous influence is manifest.

Donald Hood¹ describes an *acute general dropsy in children* not caused by renal disease, evanescent and perhaps analogous to urticaria and due to acute auto-intoxication.

In the case of "essential œdema" reported by Tosti and Nazari² the nervine theory was not called to aid, and the etiology remained obscure. A boy, aged seven years, developed facial œdema; adenoids were removed without effect, and the œdema spread to the entire body. There was no evidence of heart disease or kidney disease, but the dyspnoea increased to the point of cyanosis, and death occurred after six months' illness from respiratory and cardiac failure. The kidneys were sound, the heart free from valvular disease, but slightly dilated, and the lungs

¹ Clinical Journal, January 31.

² Il Policlinico, November, 1899; Epitome, British Medical Journal, January 20, 1900.

were compressed. Was this a case of central obstruction of the lungs or of impairment of the lymphatic circulation?

The blue œdema of hysteria, described by Charcot in 1889, in contrast with the white œdema of hysteria, is the subject of D. C. Leon's¹ thesis. He regards it as distinct from acute inflammatory and from cardiac œdema, from Raynaud's disease and erythromelalgia of Weit and Mitchell.

Hydrops Hypostrophos. H. Schlesinger² entertains original and suggestive views of this mysterious morbid process, affiliating with a great variety of pathological conditions.³ A few instances only can be given here as illustrations. This unaccountable dropsy, "hydrops hypostrophos," as he terms it, would be by no means limited to the skin, but might attack deeper parts—*e. g.*, as "hydrops hypostrophos articulorum," the joints; as "hydrops hypostrophos tendovaginarum," the tendon sheaths; as "hydrops hypostrophos gastro-intestinalis," the mucous membrane in some cases of nervous diarrhœa—and this might be analogous to the "nervous coryza with sneezing" which sometimes, like the nervous diarrhœa, substitutes itself for the cutaneous œdema in the hands. In the deeper areolar tissue it might account (Fuchs) for the rare occurrence of an acute relapsing exophthalmos, while the lips, gums, tongue, glottis, and perhaps in some forms of asthma the air passages, might be the seat of the same process. The parotid, the kidneys, and other glands might be affected. Obscure headaches, vertigo, and many other ills might own the same pathology; indeed, there seems to be no limits to the etiological possibilities opened up by this ingenious hypothesis.

IRREGULARITIES OF THE CARDIAC RHYTHM.

Arrhythmia. K. F. Wenckebach⁴ recognizes a functional disturbance (1) of the automatic irritability of cardiac fibres, or (2) of their power to transmit the stimulus, or (3) of their contractility.

Paroxysmal Tachycardia is discussed by A. Hoffmann⁴ on a clinical basis (126 cases), necropsies yielding only negative results. The main features are suddenness of onset and of cessation and temporary dilatation of the heart. In eleven cases the urine was of low specific gravity and very abundant ten minutes after the attack, although previously normal; two hours later the specific gravity had risen from 1002 to

¹ Paris Thesis, 1899, No. 173; Epitome, British Medical Journal, May 20.

² Münch. med. Woch., August 29, 1899.

³ Epitome, British Medical Journal, October 28, 1899.

⁴ Wiesbaden Congress; British Medical Journal, April 28, 1900.

⁵ Ibid.

1012 to 1018. Inequality of pupils, perspiration, and vomiting seem to point to the implications of the medulla, but Hoffmann regards the disease as an accumulation of extra systoles or as a cardiac tetanus, toxic or reflex in origin. Nothnagel traces an analogy between tachycardia and epilepsy, while Rosenstein views it as a sympathetic paresis, and mentions the case of a man who promptly cured his attack by standing on his head.

One of J. Magee Finny's¹ three cases (F., aged twenty-three years) ended fatally by arterial thrombosis and gangrene, suggesting toxic infection and myocardial degeneration. Herringham's patient, aged eleven years, presented dilatation with some tachypnoea and cyanosis, which had recurred for five years (lasting one and a half to thirteen days, with a pulse-rate of 240 to 260); no cause discovered. The relative freedom from discomfort contrasted with the distress of "palpitations" suggests an altered habit rather than a disease.

Emesis by hypodermatic injections of apomorphine ($\frac{1}{10}$ grain) is recommended by Philip Zenner,² and both his patients were aware that the act of vomiting slowed the pulse, although in one of them emesis soon lost this beneficial effect.

Galvanization of the right and left vagus at alternate sittings (Cardew, from 2 to 4 milliampères—*i. e.*, 6 to 10 Schall cells—the anode to the nape of the neck, the cathode between the thyroid cartilage and the sternomastoid for six minutes three times a day) is recommended by E. Sansom³ for the post-influenzal heart hurry, though six months may elapse without improvement.

The paroxysmal tachycardia which is coupled with insomnia calls for 20 to 30 grains of sodium bromide, with a 10-grain chloralamide or trional cachet at bedtime, while opium or morphine should be avoided unless indispensable.

In dyspeptic cases the alkaline carbonates and 8 grains of phenacetine, with 1 grain of camphor or 15 grains of antipyrin, may abort a threatening attack.

Climatic treatment, sea-voyages, freedom from anxiety, fresh air, and change of scene are of value, since no organ reacts more directly to psychological influences than the heart.

Parry's Disease (Graves' or Basedow's) and Thyroidism. A century of theories have not succeeded in explaining this mysterious disease, first described by Parry in 1825, and at the present time the parasitic theory occupies a prominent place. The others are summed up by Godfrey Carter⁴ in two groups: (1) It may be due to some disturbance

¹ Medical Press and Circular, June 21, 1899.

² New York Medical Journal, March 3.

⁴ Edinburgh Medical Journal, October, 1899.

³ Lancet, October 21, 1899.

of the sympathetic nervous system ; (2) toxæmia—the toxæmia having its origin either in some external poison or in a perverted or superabundant thyroid secretion. Carter himself is inclined to agree with Prof. Grasset in regarding the condition as anæmic and due to hæmatozoa.

Hirschlaff¹ reports a case of *acute exophthalmic disease* in a chronic goitrous subject, in support of the toxæmic view (hyperplasia of the thymus, tonsils, spleen, and adenoid tissue of the alimentary tract and of the heart), while sidelight has come from the pathology of the analogous states of thyroidism, iodothyroidism, and constitutional iodism.

The theory of secretory toxæmia derives strong support from Oswald's recent study of the two active constituents of the colloid substance, a nucleo-proteid and *thyreoglobulin*—a body containing 1.6 per cent. iodine. Thyreoglobulin is the bearer of the specific power of curing myxœdema and of producing experimental thyroidism.² It is supported by the clinical observations of Gautier and Jaunin on the "Frequent Intolerance for Iodine in Chronic Goitre."³

CONSTITUTIONAL IODISM⁴ consists in acute symptoms equally distinct from those of acute poisoning with iodine and from the common form of iodism incidental to the excretion of iodine by the skin and the mucous membrane, viz., "rapid emaciation, prostration, tremors, palpitations, tachycardia, dyspnœa, dry cough, sweats, insomnia, and intense nervous excitement." This complex has long been known in Switzerland, where goitre is endemic, for it is in cases of goitre that treatment by iodine, even when the doses are small, that it is apt to arise. In some cases the symptoms persist long after the iodine has been suspended, and these patients have been regarded, for instance by Trousseau, as suffering from a latent form of Graves' disease without exophthalmos, in which the administration of iodine brought about an aggravation. The cases which Jaunin brings forward are of great importance, as some of them support an opposite view in spite of the great resemblance of constitutional iodism to latent exophthalmic goitre.

(1) F., aged sixteen and a half years, emaciated, pale, tremulous, pulse 142 ; marked exophthalmos and goitre since infancy. The acute symptoms were of two months' standing, following the use of a secret cure (ointment and medicine). On phosphate of soda (75 grains per diem) and subsequently iron she recovered completely in two months.

(2) F., aged fifty-six years, goitrous for fifty years, developed the symptoms of Graves' disease directly after two injections of 2 grammes

¹ Zeitschrift für klin. Med., 1899, Bd. xxxvi., p. 200.

² Hoppe Seyler's Zeitschrift für Physiol. Chir., vol. xxvii., Parts 1 and 2.

³ Revue Méd. de la Suisse Rom., 1899.

⁴ Ibid., May 20, 1899.

of iodoform emulsion. Seven months later exophthalmos occurred. The symptoms gradually disappeared under phosphate of soda.

(3) F., aged thirty-one years, treated for goitre by local injections of iodoform. Rapid emaciation, weakness, anæmia, vertigo, nervous excitement, tremors, night-sweats, cough, etc., led to suspicion of phthisis, but as the injections were relaxed she soon recovered.

(4) F., aged fifty-two years, long goitrous. Iodides internally and iodine liniment to the chest resulted in three weeks in temporary exophthalmos and other symptoms of Graves' disease. She recovered under phosphate of sodium.

(5) In another goitrous woman, aged fifty-two years, airol and iodide of lead ointment were used for a varicose ulcer and phlebitis. Marked symptoms followed, resembling latent exophthalmic goitre. She had had the same symptoms on previous occasions after treating the goitre with iodine ointment.

Since, etiologically, the cases might be regarded as iodism and clinically as latent or manifest exophthalmic goitre, Jaunin suggests that they might be defined as cases of iodothyroidism, in which the thyroid element plays a leading part.

This is hardly the place to enter into a discussion of the various speculations which spring from these observations. Their practical outcome may be summed up in the following propositions:

(1) Thyroidism in its clinical symptoms closely resembles and may be identical with Graves' disease.

(2) It may be artificially produced by overdoses of thyroid extract.

(3) Its production by thyreoglobulin identifies the latter as the active principle exciting the symptoms.

(4) The fact that enlargement of the thyroid is the usual condition in Graves' disease is consistent with the view that excessive production and absorption of the thyreoglobulin is the source of the symptoms, and it is conceivable that they may result without any obvious increase in the size of the gland.

(5) In simple goitre there may be no undue absorption, though there is an increased local accumulation of the products of the gland.

(6) The occurrence of acute iodothyroidism in chronic goitrous cases after the administration of iodine suggests on the part of the latter a power to promote the absorption of the thyreoglobulin or to modify its constitution so as to render it more active.

Sir William Stokes¹ traces a majority of the cases to shock: (1) Tachycardia, (2) palpitation, and (3) exophthalmos following in the order stated.

TREATMENT. Too much value cannot be attached to *hygiene* and to a searching antiseptis.

¹ British Medical Journal, October 29, 1899; The Medical Annual, 1900.

1. *The Surgical Treatment.* This is to be considered early, but usually should not be attempted before medical measures have failed, when a choice will have to be made by the surgeon between (1) ligature of the arterial supply, (2) partial excision of the gland, and (3) resection of the sympathetic ganglia. While internal medication may give only temporary benefit, partial removal of the gland is followed by improvement and sometimes by perfect recovery. Its risks are deprecated by Jonnesco,¹ who advocates total and bilateral resection of the cervical sympathetic, though partial resection of the two first ganglia may succeed. Of ten cases six were cured and four improved, the exophthalmos disappearing first, the goitre last. Simple section is useless.

Reverdin has frequently noticed in a series of 6000 operations on the thyroid, even in aseptic cases, a "thyroid fever," presumably due to absorption of secretion.

J. Pollard and R. Lake² refer to the warning by Kocher and others to avoid handling the thyroid during operations, lest dangerous symptoms should arise afterward. (See Vol. I., 1900.)

2. *The Medical Treatment.* The following drugs seem to possess a prior claim, and should be tried individually :

R.—Potassii iodidi (to be increased to gr. x)	gr. iij.
Tr. iodi	℥v.
Glycerini aurantii	ʒj.
Aquæ	ad ʒj.
Ft. mist. Sig.—The dose to be taken three times a day.	

Arsenic, in the form of sodium cacodylate ($\frac{1}{2}$ grain), given as a pill, of which one and subsequently two are to be taken three or four times daily during alternate weeks.

M. L. Mabile's observations, both in clinical and in experimental cases, have demonstrated that arsenic checks the tachycardia of thyroidism.

The Glandular Extracts. Boisvert³ has cured a case within three months by the administration of extract of thymus in increasing amounts. Small quantities of the thyroid extract (1 to 2 grains) might be given a trial.

Other *special remedies* have been praised, particularly belladonna, but I am in favor of variously combining them to suit individual cases, *e. g.*:

R.—Tr. digitalis	℥v.
Tr. belladonnæ (to be progressively increased)	℥vj.
Tr. nucis vomicæ	℥vj.
Tr. cardamomi comp.	ʒss.
Aquæ chloroformi	ad ʒss.

Ft. mist. Sig.—This dose to be taken with equal parts of water three times daily.

¹ Centralblatt für klinische Medicin, February 11, 1899; Medical Annual, 1900.

² British Medical Journal, p. 998.

³ Revue Méd., Montreal; Philadelphia Medical Journal, November 4, 1899.

After a few days tablets of dried suprarenal substance are added with a view to steadying the heart by further peripheral vasoconstriction.

The *local treatment* includes the application of cold and of galvanism. The ice-bag has been recommended to be applied to the nape of the neck or to the upper part of the chest, but I have not had any striking effects from its application to the thyroid itself. Galvanism has been found useful and sometimes curative. The method of applying it is to place the anode over the cervical spine and the cathode over the peripheral nerves.

Status Thymicus. The fatal symptoms described under this name remain unexplained. They present a general resemblance to those of uræmia, and in some instances albuminuria is present. M. Laub¹ has recently recorded four cases in young males aged from seventeen to twenty-three years, and thinks that the diagnosis can be made when a young person, apparently in good health, suddenly falls unconscious, with or without any external cause, becomes comatose, and dies in a few hours. The spleen is generally found to be enlarged, and careful examination may disclose similar enlargement of the lymphatic follicles in the nasopharynx and at the base of the tongue. The necropsy reveals an enlarged and persistent thymus.

PROGNOSIS AND PROPHYLAXIS IN HEART DISEASE.

Exercise in Cardiac Disease. A safe test for the soundness of the heart is the persevering daily use of a moderate amount of athletic exercise. So long as day by day none but pleasant consequences result we are safe and the better for it, but this is very different from the reckless suggestion made by *The Wheelman*:² "The cyclist who has doubts as to the strength of his heart may easily put the matter to the test by riding up a steep hill as fast as possible, and if there is any heart weakness a sharp pain will strike him in the back between the shoulders. If the pain does not appear he may take it that his heart is practically sound."

The Heart and Life Insurance. Unanimity is perhaps unattainable where the anatomical as well as the clinical basis of our judgment is so uncertain. E. Moritz³ traces the divergence of views among Russian physicians to their varied allegiance to the Berlin, to the Vienna, or to the Paris schools. For instance, discrepancy in the estimates of the cardiac and of the hepatic dulness becomes obvious when we place side

¹ Wiener klinische Wochenschrift, 1899, No. 44; Lancet, March 24, 1900.

² British Medical Journal, September 30.

³ Ibid., October 7, 1899.

by side the diagrams of Jacob, Debove and Huchard, Weil, and Heidenreich. Again, cardiac disease of fatal type is frequently latent, while cardiac arrhythmia is often of small consequence. Too much attention cannot be given to a determination of the "thoracic index" or "coefficient," viz., of the shape of the thorax and of its transverse and antero-posterior diameters.

Prognosis of Chronic Valvular Affections. N. S. Davis,¹ Jr., has studied 250 cases of valvular heart disease, and has made some interesting observations in prognosis. Congenital lesions and those produced by eruptive diseases are stationary; those from chorea, without marked rheumatism, run a comparatively favorable course; those from rheumatism are least favorable when alternately progressive and degenerative. According to Davis, the mortality from heart disease is highest in the Pacific and Rocky Mountain regions, lowest in the Middle West.

MITRAL STENOSIS is found by Hugh Walsham² to coincide but rarely with phthisis. Not one case among 1000 patients with undoubted phthisis was observed clinically, and in a series of 130 post-mortems on consumptives, including 21 with valvular heart disease, typical mitral stenosis was found but once.

Cardiac Affections in Infancy and Childhood. This subject, always latent and too much neglected in the past, is for the physician a field of unlimited opportunities, to which Zahorsky³ has done good work in calling attention. Our duty in the prophylaxis of infantile and juvenile rheumatism and heart disease was also dwelt upon by the author.⁴ A systematic examination of all children as to the individual type of heart would bring to light many functional peculiarities and some incurable valvular changes, but there would also be found a variety of conditions capable of prevention or cure. To be warned in time and to be treated in time is, after all, nothing more than our patients have a right to expect.

Convalescence and its Cardiac Risks. Convalescence from all severe acute affections needs to be guided and watched with special regard to the safety of the heart. This has been insisted upon in connection with diphtheria, rheumatic fever, and influenza; but it is also of supreme importance in pneumonia and typhoid fever.

J. Mollard⁵ informs us that in no less than four-fifths of his *typhoid* cases cardiac troubles supervened during convalescence, sometimes as late as a month after defervescence. Inasmuch as in fatal cases it is usual to find evidence of myocardial degeneration after death, in non-fatal cases also little or much of it may be suspected according to the

¹ Medical News, June 17; Journal of the American Medical Association, June 24.

² British Medical Journal, October 28, 1899.

³ New York Medical Journal, February 10.

⁴ Lancet, March 17, 1900.

⁵ Presse Médicale, January, 1900.

severity of the attack and to the treatment and diet adopted. Among the abnormalities noticed were: (1) Displacement, disappearance, or attenuation of the apex beat; (2) disturbance of rhythm (tachycardia, embryocardia, or arrhythmia); (3) alteration of the sounds (mesocardial systolic murmur, cantering sound, attenuation of the first or of both sounds—all of which point to myocardial weakness). The practical conclusions are: (1) The desirability of counteracting the wasting effects of the fever by suitable and sufficient diet throughout the attack, and (2) the necessity of prolonged rest and of most carefully graduated exercises during the progress of convalescence.

Mossé¹ finds that in typhoid the prognosis of the attack itself is not seriously affected by the pre-existence of a valvular lesion.

The Cardiac Danger in Using the Stomach-pump. In R. Kirsh's² case of "acute" dilatation, resulting fatally, the intense pain, vomiting, and large area of dulness and fluctuation were akin to symptoms of perforation. In reality they were due to an immensely dilated stomach, with a patent pylorus admitting two fingers. The patient died after the stomach had been emptied and rinsed, "the operation having failed to relieve the depressed cardiac action." The possibility that the operation may cause the depression was suggested to me by a similar case. The patient presented an enormous stomach, reaching to the right iliac fossa, apparently full of fluid in spite of copious vomitings some hours previously. The stomach was emptied and washed; but after clear washings had been obtained, some stained duodenal fluid again came up through the tube, demonstrating the patency of the pylorus. That night the patient nearly died of cardiac failure, and was with difficulty revived. Death occurred from exhaustion a few days later. These facts point to the desirability always, but particularly in those cases where the stomach is considerably dilated, of applying before the lavage a broad hypogastric binder, which is to be steadily tightened, as a support to the splanchnic vessels, and of thus securing an efficient lavage without again stretching the stomach by enormous washings. The gastric accumulation, in spite of a patency of the pylorus, and the regurgitation from the duodenum are probably due to obstruction of the transverse portion of the duodenum by the dragging and pressure of the omentum (in these cases perhaps produced by the weight of the stomach itself). The mechanism of this duodenal incarceration is fully described by Albrecht.³

¹ Thèse de Lyon, 1899; British Medical Journal, October 28.

² Deutsche medicinische Wochenschrift, Berlin, August 17; Journal of the American Medical Association, September 9, 1899.

³ Virchow's Archiv, 1899; also Ewart and Jaffrey. "A Case of Uncontrollable Vomiting Due to the Presence of an Aneurism, which was Relieved by Laparotomy and Manipulation."

The Prophylactic and Curative Treatment of Rheumatic Endocarditis by Rest, Blistering, and Iodide. Richard Caton, of Liverpool, stands alone in claiming to check by treatment an early valvulitis or to prevent its occurrence. In a series of 500 cases of acute rheumatism he was able to keep cardiac complications under 20 per cent. : 54 had cardiac mischief on admission, and 34 of these were discharged with normal hearts. These remarkable results were reported before the Clinical Society of London, March 9th, and in the discussion on "The Prophylaxis of Rheumatic Heart Disease and of Rheumatism," before the Chelsea Clinical Society, March 13th and 20th. Caton's treatment consists in keeping the patient in bed, wrapped in flannel from the neck to the feet, and on a light diet, absolutely excluding all nitrogenous food except milk. Internally he gives the salicylates and a certain amount of cholagogue. If pain should linger in any of the joints a few blisters will relieve it. A patient who has developed a true valvular bruit should be kept motionless in a recumbent position for a great length of time, so as to slow the action of the heart and prevent the blood waves of high tension from injuring the swollen and softened valve cusps. It might be possible to influence the heart itself through the first, second, third, or fourth dorsal nerves by applying small blisters over their anterior terminations (above, but not over the pericardium), to be followed by a small poultice. The sodium or potassium iodide (8 grains), three times daily, is intended to promote the absorption of the inflammatory products in the endocardium. The value of continued rest was especially insisted upon.

Doubts were expressed in the discussion as to the protective power of the salicylates for the heart, and Donald Hood doubted their complete efficacy against rheumatism itself. The claims of the alkaline treatment to reduce the frequency of endocarditis were set forth by Ewart in connection with treatment and diet, and its value attributed to its tendency to lower the coagulability of the blood—a property shared by iodide of potassium, which was, therefore, to be recommended in threatened endocarditis.

Burney Yeo has seen so much cardiac depression from the salicylates that he was always glad to reduce the dose ; but he agreed with Osler that their combination with alkalies was the best. Rheumatism is a dehydrating disease, and large draughts of water are needed to dilute the concentrated blood. The common statement that the left side of the heart is functionally more active than the right is inadequate to explain the immunity of the latter in acute rheumatism. More probably the endocardium of the right heart is protected in some way by the venous condition of the blood. C. C. Gibbes said that of the four different kinds of salicylate of sodium on the market the official was the

cheapest and the most impure, and, therefore, could not be pushed to the full benefit of the patient. William Keen thought that there was less risk of heart complications if the urine was kept alkaline. Sir Richard Douglas Powell adhered to the salicylate treatment, but in some cases its depressing effect on the heart renders its continuous use impossible. Delirium coinciding with a fall in temperature was characteristic of an intolerance for the drug. Alkalies were called for by the main factors of the rheumatic illness. Opium was no longer necessary for the relief of pain, except for the first twenty-four hours; but in myocarditis, in bad cases of endocarditis, and in pericarditis it was of great value. In arthritis and pericarditis blisters were efficacious, but it had not been shown that they controlled rheumatic fever.

A. E. Sansom,¹ in reviewing the treatment of the rheumatic cardiac affections, considers first the manifestly acute cases with mitral reflux. The patient has to be safeguarded and comforted by the salicylates or salicin, while cardiac strength is judiciously kept up sometimes, though this is the exception, with digitalis. Alkalies are also to be given "because they do good." In the second class there is no active rheumatism to treat, though 98 per cent. of them perhaps are rheumatic in origin. Here the circulation has to be improved by all available means, including rest, general treatment, digitalis if indicated, or any other of the heart tonics, but largely and almost chiefly by mechanical and hygienic measures.

In early mitral stenosis we should aim at delaying the gradual narrowing of the damaged orifice. Too much rest would rather favor the contraction by perpetuating the cardiac and venous congestion and the debility of the patient. The definite object of treatment is to increase the driving power of the right ventricle and to assist the venous circulation—*e. g.*, by massage, exercises, baths, particularly by short, warm baths followed by cold sponging. The heart will get feeble if it is too much rested, and graduated exercise is, therefore, indicated for this insidiously progressive trouble.

L. Emmett Holt² is an advocate for prolonged rest in bed after acute cardiac inflammation in children, not for weeks only, but for months. Cardiac overwork and excitement, difficult to check in the adult, are beyond our control in children who are allowed to get up.

ENDOCARDITIS AND VALVULITIS.

Tonsillitis and Endocarditis. Packard³ raises a practical point in everyday pathology in suggesting that an acute tonsillitis may be the

¹ Clinical Journal, January, 1900. ² Arch. of Pediatrics, New York, December, 1899.

³ American Journal of the Medical Sciences, January, 1900.

only morbid antecedent to a valvular endocarditis. Since it is pervasive not only to tubercular but to rheumatic infections, the tonsil may well play an analogous part in infecting the endocardium quite apart from rheumatism. This origin of endocarditis might be demonstrated if records of the examination of every child as to cardiac soundness could be systematically preserved by family attendants.

ACUTE ENDOCARDITIS FROM THE INFLUENZA BACILLUS. Austen¹ has identified the influenza bacillus in the vegetations of three cases of recent endocarditis (in two cases ulcerative) superadded to chronic valvular changes. Thus the micro-organism of influenza may affect the heart, which has long been held by clinicians (Sansom, Saundby and others) to be vulnerable to the influenzal poison.

A NEW ORGANISM OF ENDOCARDITIS—*micrococcus zymogenes*—has been added to the list, which already includes, besides the prevalent staphylococci and streptococci, the pneumococcus, the gonococcus, the typhoid, tubercle and anthrax bacilli, and the influenza bacillus. This new microbe was discovered by McCallum and Hastings² in a case of endocarditis. It closely resembles a micrococcus from an old cesspool studied by Harris (May, 1898), in the Pathological Laboratory, in Baltimore. The micrococcus was isolated in pure culture during life (nine days, and three days before death) from the blood of the patient, who was suffering from an acute lesion of the aortic and mitral valves, with infarcts in the spleen and kidneys. It produces a milk-curdling and a proteolytic ferment, and is very resistant to heat and antiseptics, and is pathogenic for mice, rabbits, and some dogs.

The Non-septic, Malignant Form of Endocarditis Rheumatica. This affection, of which M. Litten³ has added seven new instances to his previously published eleven cases, may be difficult to distinguish from peliosis rheumatica and Werlhoff's morbus maculosus. It may begin in the course of an attack of articular rheumatism or chorea, or frequently it commences with a rigor or a hemorrhagic rash, and may last for weeks or months. Its course is similar to that of septic endocarditis, but without suppurative processes and with exclusively bland infarcts. The irregularity of its rigors and the acceleration of the heart's action are characteristic. The objective symptoms at first are those of the usual simple rheumatic variety, but a simple rheumatic form has never been shown to pass into a malignant or a septic form. The prompt response to salicylic acid distinguishes the benign variety.

¹ Johns Hopkins Hospital Bulletin, 1899, p. 104.

² Ibid., p. 46; Journal of Experimental Medicine, New York, 1899, vol. iv., p. 521.

³ Berliner klinische Wochenschrift, No. 28; Journal of the American Medical Association, August 19.

CARDIAC OVERSTRAIN AND DILATATION.

Cardiac Overstrain. This has been specially studied by F. J. Poynton,¹ Williams,² and Stengel.³ The following cases quoted by Poynton illustrate two well-known results of excessive strain :

(1) *Tachycardia.* A strong man, aged twenty-six years, went for the first row of the season in a four-oared boat, and on landing he felt extremely ill, and vomited. The heart was acting at the rate of 180 to 200 per minute. He died a few days afterward, the tachycardia persisting to the end. At the necropsy evidence of previous pericarditis and mitral valvulitis was found.

(2) *Rupture of Valve.* A healthy coast-guardsman, aged between forty and fifty years, had his weekly football game in the afternoon. In the evening, thinking he heard a steamer, got up and went out of the house to find her whereabouts ; but the sound was not a steamer, but his ruptured aortic valve. When admitted to the hospital he had well-marked aortic regurgitation and a murmur audible at the bedside.

Williams' observations on the overstrain of long-distance runners are of unusual interest in connection with the great severity of the exertion undergone. Careful records were kept of the weight, pulse, respiration, temperature, urine, and size of the heart before and after racing. The significance of the heart murmurs heard in the second left intercostal space is illustrated by some of the observations. The mitral valve and the left ventricle showed most evidence of strain. One of the runners, after running five miles, presented a temperature of 98° F., pulse 100 and tense, respiration 32 ; there was in addition a faint trace of albumin. Another, after a twenty-five-mile race, showed a temperature lowered 4.9°, and he had lost four and a half pounds in weight. The urine contained 0.1 per cent. of albumin and also numerous casts ; the pulse was of low tension. In the runners who took the first and second prizes during the races no murmurs were detected, while in all the others definite cardiac murmurs could be heard. This justifies the conclusion to be drawn from this observation that the greater the muscular vigor the less is the liability to murmur.⁴

A. Stengel's practical conclusions from six years' observations upon the athletes of the University of Pennsylvania are that long cycle journeys and holiday overexertion must not be undertaken by those not in regular training, and that medical supervision is desirable during the athletic period of life, while later there should be a gradual, not a

¹ British Medical Journal, August 19, 1899.

² Boston Medical and Surgical Journal, September 7, 1899.

³ American Journal of the Medical Sciences, November, 1899.

⁴ Epitome, British Medical Journal, November 18.

sudden, cessation from the more severe forms of muscular effort and exercise. Cardiac dilatation and murmurs (perhaps cardiopulmonary), which are commonly occasioned in the untrained, do not occur in "seasoned" athletes. The remote consequences include ventricular hypertrophy and cardiac muscular disorders in later life.

A. C. Getchell devotes a paper in the *Medical News*, July 8, 1899, to the cardiac evils of excessive cycling, and gives a short bibliography. Acute dilatation may result, or hypertrophy may develop, with a possible sequence of aortitis and aortic valvular incompetence.

Etiology and Significance of Dilated Heart. H. A. Caley¹ dwells upon (1) undue strain and (2) myocardial weakness, primary or secondary, as the ultimate agents in determining the amount of dilatation. Caley might perhaps have referred to clinical facts suggesting that a large share belongs to the nervous department in the affections of this typically neuromuscular organ. Many cases cannot be explained without calling to aid the nervous factor, and nervous impressions, here as elsewhere, are apt to leave an indelible record; the late development of dilatation from a temporary cause may thus be explained.

DILATATION OF THE HEART is described by John A. Thompson² as an unnoticed complication of obstructive lesions of the upper air passages. Perhaps authors have not dwelt sufficiently upon it, but the association is well known to physicians devoting attention to chest and heart affections. The dilatation of the right side of the heart is the worst of the two results of the obstruction, the other being pulmonary emphysema.

Rheumatic Myocarditis and Dilatation. F. J. Poynton's³ studies on the pathology of the myocardium, chiefly in fatal rheumatism, show that at the *valve rings* (where numerous vessels are arranged beneath the endocardium around the orifice and at the base of the valve flaps, the latter containing lacunæ) exudation takes place around the vessels and into the lacunæ, not altering the aspect of the endocardium unless leucocytes should accumulate there, when yellow points can be detected.

Similar changes are found at the pericardial surface, and the two processes may be associated. A study of the arrangement of the vessels around the mitral orifice by vertical and transverse sections in healthy and diseased conditions, coupled with a study of the changes in an inflamed pericardium, gives perhaps the most realistic picture possible of the development of mitral stenosis as an after-result of rheumatism. The question arises whether the pericarditis is primary or is secondary to those changes which belong to the heart wall, viz., cellular exudations in scattered foci. Poynton inclines to regard the latter changes as not necessarily dependent upon pericarditis, although, as shown by

¹ *Lancet*, June 5; *Journal of the American Medical Association*, June 24.

² *Ann. of Otology*, St. Louis, Nov., 1899.

³ *British Medical Journal*, Nov. 4.

Hill and Barnard, the pericardium may have as its function the support of the heart wall, yet dilatation may occur without any pericarditis to account for a weakening of the pericardium.

As regards the condition of the cardiac muscle in rheumatic fever, the facts available are only those which belong to fatal cases. In rheumatism there is an alteration in the blood state, and possibly this may damage the cardiac fibre. In some rare cases of rheumatism death has occurred from cardiac failure with dilatation, and no pericarditis has been found. In two acute cases with pericarditis the general fatty changes found throughout the heart, including the papillary muscles, were probably secondary to an enfeebled circulation. There are other alterations, too, in acute rheumatism, such as hyaline degeneration, loss of striation, and vacuolization. Even in children granules sometimes staining with thionin can be detected in the region of the nucleus, and the nucleus itself may also show numerous granules.

H. Schott¹ divides the post-influenzal troubles into three groups: (1) Primary cardiac, (2) cardiac affections secondary to other post-influenzal diseases, and (3) pre-existing cardiac affections aggravated by influenza.

Martin Mendelsohn² states that in all myocarditis the symptoms are those of weakness, manifest in slight cases on exertion only, whether bodily or mentally, but in the later stages becoming permanent; and that the physical signs are either those of left ventricular hypertrophy with accentuated sounds, or when compensation has broken down those of dilatation with weak sounds.

TREATMENT. The lines of treatment must be, obviously, avoidance of overwork and of influences such as those of tea, coffee, alcohol, and tobacco. Since it is impossible to eat without drinking, the dietetic principles of Oertel's cure are not suitable for debilitated subjects. The earliest indication is absolute rest in bed; later the heart must be exercised by graduated bodily and mental work, the bowels regulated, and meals made small and frequent. Acute vertigo, palpitation, dyspnoea, or cyanosis are best treated by ether and caffeine. Digitalis should be reserved for cases of failure of compensation; but convallaria, Adonis vernalis, sodium or potassium nitrite may be tried, and sometimes ergot is of use by its tonic action on the vessels.

ANGINA AND DEGENERATIVE AFFECTIONS.

The Treatment of Angina. F. Samberger's³ analysis of seventy-three cases occurring at the Polyclinic of Prague from 1895 to 1898

¹ Wiesbaden Congress; British Medical Journal, April 28.

² Deutsche Praxis, 1899, No. 17; Epitome, British Medical Journal, December 23.

³ Sbornik Klinický, 1899, vol. i., Fasc 1.

leads him to the conclusion that angina pectoris may be recovered from and need not end in sudden death, provided it be not combined with aortic insufficiency.¹

For the treatment of the attack Sir Thomas Lauder Brunton (*Encyclopædia Medica*) recommends the amyl nitrite inhalations and hot applications. The patient should carry nitroglycerin tablets and "begin to nibble one as soon as the pain comes on," and if this should be severe let it be broken up quickly in the mouth and swallowed. Tetranitrin (tetranitro erythrol) in $\frac{1}{2}$ -grain tablets may be taken thrice daily as a prophylactic. But the drug which does most to remove the cause of the attacks is iodide of potassium (5 to 15 grains), thrice daily; and this may be long continued for periods of ten to fourteen days.

POST-INFLUENZAL CARDIAC PAIN, observed in certain cases by A. E. Sansom,² was paroxysmal in eight cases, and sometimes so intense as to resemble angina. The most acute cases had a fatal tendency. Phenacetin, antipyrine, and morphine hypodermatically, judiciously employed, were means of alleviation, and in the other cases the iodides, as recommended by Huchard, are a valuable treatment. Iodide of sodium (5 to 10-grain doses) is the best for a prolonged administration, and can be at first combined with ammonia and later with small doses of arsenic.

The Treatment of Cardiac Sclerosis. Huchard³ makes a distinction between three stages. The preliminary or "presclerotic" stage is one of raised arterial tension with vasoconstriction. Purgative and diuretic mineral waters, general and abdominal massage, and a small dose of lycetol (tartrate of dimethylpiperazin) are indicated; but fluids should be restricted. All stimulating foods and those containing ptomaines, and tobacco smoking, are to be avoided. Digitalis and potassium salts are unsuitable, but iodide of potassium and nitroglycerin are indicated. Ergot, digitalis, atropine, and caffeine (except in small diuretic doses) should be eschewed as likely to increase tension, and antipyrine, atropine, morphine, etc., as likely to diminish renal efficiency. Sulphurous, chlorinated, and carbonated baths, as well as high altitudes, are also inadmissible. The second or "cardio-arterial" stage, in which the vessels of the myocardium suffer degeneracy, calls for the same hygienic measures and for moderate doses of sodium iodide and of nitroglycerin; but any symptoms of heart-failure should be met with digitalis and spartein sulphate. In the third or "mitro-arterial" stage there is loss of compensation. Strict milk diet, theobromine as a diuretic, and sufficient doses of digitalis or digitalin are required. Vene-

¹ Epitome, British Medical Journal, June 17.

² Lancet, October 21.

³ Journal de Praticiens, December 23, 1899.

section or thoracocentesis may be necessary if complications should arise. The first stage is the only one at which a cure may be hoped for.

FATTY DEGENERATION. Hasenfeld and Von Fenyvessy¹ found experimentally that acute fatty degeneration does not disable the heart muscle, which continues to respond to the usual demands on its strength as well as the normal heart. For instance, only shortly before death can signs of loss of compensation be observed in a heart degenerated by phosphorus. In this form of poisoning failure of the circulation is largely due to vasomotor weakness.

The practical conclusion is that the diagnosis of fatty degeneration of the heart must often be difficult. The conditions of cardiac weakness often observed cannot with certainty be referred to fatty degeneration of the myocardium. Authors think that in most cases where there is loss of compensation fatty degeneration is the result, not the cause, of the latter.

GUMMA OF THE HEART, judging from the paucity of published instances, is a rare condition. In 11,000 necropsies conducted at St. George's Hospital only eight cases occurred, the last of which is described by W. S. Lazarus Barlow,² who gives references to a few other cases brought before the Pathological Society of London.

FIBROID DISEASE is not so rare. Barlow estimates its frequency at 1 in 250 to 300 necropsies. Its relation to syphilis is still uncertain, and Hilton Fagge,³ in his paper on "A Series of Cases of Fibroid Disease of the Heart," entertained strong doubts as to the connection. The case of gumma reported by Barlow supports the opposite view in that the specimen shows a graduation of changes from the earliest granu-lomatous stage to the stage of fully formed fibrous tissue.

A CASE OF DISSECTING ANEURISM OF THE RIGHT VENTRICLE has been put on record by W. S. Lazarus Barlow.⁴ This cardiac lesion is no less remarkable for its rarity in affecting any part of the heart as for its occurrence on the right side. Death was due to rupture of the aneurism into the pericardium.

Hampeln⁵ reports several cases of rupture of the heart and aorta.

Capps⁶ has done valuable work in supplying a list of all the reported cases of aneurism of the coronary artery.

‘CYSTICERCUS OF THE HEART. Giordano⁷ records two cases in which no symptoms were set up, in men aged respectively twenty-two and

¹ Berliner klinische Wochenschrift, 1899, No. 7.

² British Medical Journal, November 4, 1899.

³ Transactions of the Pathological Society, 1874, vol. xxv.

⁴ British Medical Journal, November 11, 1899.

⁵ St. Petersburg med. Wochenschrift, 1898, No. 48.

⁶ American Journal of the Medical Sciences, September, 1899.

⁷ Gaz. degli Osped., December 11, 1898.

seventy years. In the latter case several cysts were found in other situations—pia mater, brain, lung, and kidney.¹

The Treatment of Shock, Heart-failure and Apparent Death.

How to anticipate shock in operations, and how to treat surgical shock, is the subject of some practical remarks by B. G. A. Monihan and J. Basil Hall.² After referring to Crile's essay on "Surgical Shock," Monihan recommends as prophylactics large doses of strychnine, hot saline solution per rectum, and, if indicated, as soon as anæsthesia sets in, a saline infusion of 1 to 4 pints. Hall has never regretted the largeness of the doses of strychnine which he has administered— $\frac{1}{4}$ grain in two desperate cases, with recovery from impending death due to air embolism during operation in one case. In severe shock $\frac{1}{4}$ grain will be tolerated without any symptoms, and where strychnine is urgently indicated it is futile to give less than $\frac{1}{10}$ grain.

Respiratory failure precedes circulatory failure, especially often, according to W. H. Hudson,³ in brain injury and disease from inhibition of the respiratory centre. Artificial respiration and hot sterile salt solution over the head and over the exposed brain (V. Horsley) are indicated. The Fell-O'Dwyer apparatus should be at hand, with an expert to use it.

PUNCTURE OF THE SPLEEN is countenanced by H. Desplats⁴ as a rapid relief for the intense dyspnœa of cardiac dilatation with venous stasis. In one of the two cases reported (in both the spleen was punctured accidentally) as much as 1200 c.c. of blood were removed. Both cases did well. There can be no doubt that the indication for depletion is thoroughly fulfilled, but we should hesitate to recommend the method until some provision is made against the possible occurrence of subsequent intraperitoneal hemorrhage.

ASPHYXIA AS A TONIC FOR THE HEART. Toxic heart-failure in animals was obviated by G. N. Durdafi⁵ by stopping respiration for one or two minutes, and thus raising blood-pressure. Sir Thomas Lauder Brunton has heard from India of a current practice of covering the mouth and nose in a swoon, and Durdafi recommends "transient asphyxia" in man as a means of reviving the heart and as a tonic, by accumulating CO₂ in the blood, and thus possibly forming the tonic action of the suprarenals. These observations agree with the clinical experience related by C. T. Williams in his remarks on Ewart's paper on "Prebalmear Treatment of Heart Disease by Carbonic-acid Inhalations," at the Portsmouth meeting of the British Medical Association, August, 1899.

¹ Epitome, British Medical Journal, July 1.

² British Medical Journal.

³ Medical News, June 10, 1899.

⁴ Journal des Sci. Méd. de Lille, January 27; Journal of the American Medical Association, February 24, 1900.

⁵ Arch. f. exp. Path. and Pharm., xiii., 2.

ELECTRICITY IN RESPIRATORY AND CARDIAC FAILURE is described by A. D. Rockwell¹ as intensifying (when directly applied) the vagus and the phrenic nerves. Since the phrenic effect is attainable by moderate faradic currents, which do not influence the vagus, they are a powerful help in respiratory failure (drowning, poisoning by opium, aconite, etc.) and in chloroform heart-failure.

RESUSCITATION IN ASPHYXIA BY RHYTHMIC TRACTION OF THE TONGUE. J. V. Laborde's² method consists in rhythmic traction of the tongue (twenty per minute), to be continued until the heart recovers. Krapp³ recommends for the slighter form of asphyxia of the new-born the use of the tracheal catheter, rhythmic traction, and delaying the ligature of the cord; and for deeper asphyxia prompt ligature, Schultze's "swinging" method, with an occasional warm bath, rhythmic tractions, cutaneous stimulation, and after hemorrhage saline injections.

Death in drowning, according to Milner Moore,⁴ is due rather to the absence of air than to the presence of water in the lungs; and it is questionable whether valuable time is not lost in seeking to evacuate the smaller bronchial tubes, which after death contain a bloody froth; while the stomach contains water.

Dogs Poisoned by Carbon Monoxide. P. W. Farrah⁵ states that blood transfusion seems to give good results; those of saline infusion were only temporary. Hydrogen peroxide in intravenous and subcutaneous injections yielded negative results.

CARDIAC AND GENERAL STIMULANTS.

The Management of the Critical Stage of Acute Diseases. We must all recognize, with O. Rosenbach,⁶ that even where antipyretics succeed in lowering the temperature the prospect may not be bettered, sometimes, perhaps, made worse. But in typhoid fever phenacetin or antipyrine (4 to 8 grains) might sometimes be given about four to six hours before the rise, and the effect is then a guide as to the intensity of the attack. A low temperature is not, however, our chief object; the patient should be treated rather than the symptoms, but "nihilism" is really the opposite of a wisely expectant treatment, which watches for

¹ Medical Record, New York, November 11, 1899.

² Journal of the American Medical Association, November 4 and 18; Fronczak, Buffalo Medical Journal, January, 1900, p. 418.

³ Prager medicinische Wochenschrift, 1899, No. 17; Epitome, British Medical Journal, November 11.

⁴ British Medical Journal, November 11, 1899.

⁵ Philadelphia Pathological Society, November, 1899; Epitome, British Medical Journal, March 3.

⁶ Berliner Klinik, August, 1899, No. 134.

and knows its opportunities. The early and reckless administration of *alcohol* obscures our view of the disease and of the therapeutic influences, and is often most injurious to the patient. Later mild stimulation is a most useful adjunct to alimentation, and throughout it is held in reserve against sudden asthenia. *Quinine* in small doses is of use as a tonic at the beginning of an acute illness, and moderate doses of *digitalis* may act as a protoplasm tonic. Above all, the indication is not to do harm by excess of zeal and by overmedication.

THE THERAPEUTICS OF HEART DISEASE. W. H. Thomson's¹ paper teaches a practical lesson on the restorative power of simple rest in bed for a failing heart, and the value of resting the heart from the stronger cardiac stimulants and of resorting to aconite in the acute exacerbations of chronic disease. "The indication for giving aconite instead of *digitalis* is a strong, laboring beat with a rapid pulse; or, again, a quick pulse associated with intrinsic cardiac pain; but a quick pulse accompanied with high tension is indicative of a renal complication, and calls for *veratrum viride*, which slows the heart and dilates the arterioles."

In chronic heart disease we should study every function contributing to cardiac nutrition. Flatulency may be relieved by sodium benzoate (10 grains, three times a day) with sodium phosphate (2 drachms), in a tumblerful of hot water, sipped slowly every morning; or we may order blue mass every fourth night, and half an ounce of sodium phosphate the next morning. There is no better diuretic for sluggish kidneys than a copious saline irrigation, at 110° F., by means of Kemp's rectal irrigator.

For dropsy *digitalis* is unsurpassed, unless it be by mercury. Thomson begins with $\frac{1}{2}$ -ounce doses of the infusion every three or four hours for two or three days, then substituting 10 drops of the tinctures of *digitalis*, of *strophanthus*, and of *nux vomica*; but with each dose of *digitalis* nitroglycerin is to be administered to obviate constriction of the arterioles.

When *digitalis* is not well borne or fails to act the following pill may be efficacious:

R. —Sparteine sulphatis	gr. j.
Pulv. scillæ	gr. ss.
Caffeinæ citratis	gr. iss.
Strychninæ sulphatis	gr. $\frac{1}{30}$. —M.
Ft. in pil. No. i.	

"All nervine medicines, such as *digitalis*, *strophanthus*, nitroglycerin, strychnine, caffeine, spartein, etc., are temporary makeshifts." Permanent good can be expected only from hygiene, fresh air, etc., and from iron, mercury, the iodides, and arsenic. In chronic endocarditis good

¹ Medical Record, March 17, 1900.

results have been obtained from $\frac{1}{24}$ of a grain of perchloride of mercury three times a day for a week at a time. Balfour recommends in old people the persevering use of 4 to 6 drops of the clear mixture of equal parts of liquor strychninæ hydrochloratis and of liquor arsenici hydrochlorici.

The Nauheim cure and Oertel's "terrain cure," in their respective spheres, are also part of the constructive cardiac treatment.

The Use and Abuse of Digitalis. This is a topic of never-failing, practical interest. The mere presence of a murmur does not call for digitalis; the heart is often better without it. A broken compensation generally demands it; W. H. Washburn¹ says "always," but he warns us that its effects must be carefully watched when the daily dose exceeds 2 to 3 grains of the leaves, particularly when an aggregate of 30 to 40 grains have been taken. It is to be discontinued for a few days when symptoms of accumulative action have set in, and then be prescribed only in the "tonic dose" of 1 grain per diem, which is safe and may be continued for months. In this dose it is always beneficial to the neurotic or weak heart.

Washburn's approval of its administration in *aortic insufficiency* can be indorsed with some reservations, but too much stress cannot be laid upon the danger which it entails in cases of advanced *mitral stenosis*. If the pulse-rate be too much reduced—a reduction which is often brought about very rapidly (in two or three days)—the prolonged diastole allows an excess of blood to be poured from the distended pulmonary veins into the left auricle, which may be paralyzed by overfilling, sudden death being a common result. A few doses will generally suffice to quiet the heart, but digitalis must then be stopped.

From Nauheim itself digitalis gets a strong word of support from J. Groedel,² who thinks well of the prolonged use of small doses, on the strength of Van der Heiden's³ experiments, which show that the accumulation is less and the accommodation to digitalis greater than we had thought. He recommends the protracted administration of small doses taken once daily, and in advanced mitral incompetence he places, with Broadbent, much confidence in its efficacy and freedom from cumulative results. In heart overstrain he believes, with von Leyden, in the small, continuous dose, with, if necessary, a return to larger doses after a complete cessation for a few days.

In slight fatty degeneration from alcohol or tobacco he agrees with Eichhorst in keeping up the treatment for long periods, but he often alternates with it periods of one week's rest, and adds the further help of baths and exercise.

¹ Merck's Archives, New York, October.

² Practitioner, April, 1900.

³ Archiv für Pharmak., vol. xix.

In tachycardia or Graves' disease this prolonged treatment is useless, but in arterio-sclerosis and in chronic nephritis he regards it as useful in the last stages, when the heart wall is yielding to the strain. In a chronic renal sufferer with frequent attacks of cardiac dyspnoea and pulmonary oedema, digitalis taken continuously for six months (2 grains daily of the powder, increasing to 5 grains), warded off the attacks and "made his last days bearable." He died of apoplexy.

Groedel ends this praise with the emphatic statement that "in the treatment of chronic disorders of the circulation he abstains as long as possible from prescribing digitalis." It is only when physical and dietetic means fail that he resorts to continuous digitalis treatment, in many cases with satisfactory results.

Schoot,¹ in the treatment of fatty heart, of which he recognizes three kinds, wisely deprecates the lowering effect of the various plans of systematically reduced diet, and recommends the combination of balneological and gymnastic treatment, with a liberal dietary.

Huchard "feels his way" with digitalis in the treatment of failing compensation, with its symptoms of anasarca, oliguria, basic pulmonary congestion, cantering sounds, etc. If the albuminuria be due to cardiac causes it will yield with the rest of the symptoms; if to renal causes it will probably diminish. Rest, purgation, and a milk diet are a useful introduction to the treatment by digitalis, which he administers in doses of 50 drops of a 0.1 per cent. solution of crystallized digitalin. Much of the so-called myocarditis is mere dilatation, but myocardial changes which deprive a heart of response to digitalis may yet allow it to improve under caffeine. Huchard's experience with the latter drug is given under "Caffeine."

The intermittent plan is advocated by Sansom²—*e. g.*, intervals of rest of three or more days after three-days' administration of three doses (10 to 20 minims of the tincture, or 1 drachm of the infusion, or 1 grain of the leaves); or after a three-days' course of a single hypodermatic injection of $\frac{1}{100}$ grain of digitalin, or after two-days' administration of one dose of digitalin (2 to 4 granules of Nativellé's, each containing $\frac{1}{10}$ of a milligramme). Any drug which excites the heart or increases tension should not, he thinks, be administered continuously. Alcohol is to be avoided in general; claret or Moselle are alone permissible.

Dialyzed digitalis is prepared by Bosse,³ according to Golaz's process, from the fresh plant, weight for weight. The dialysate is then a standard solution in which the active constituents can be definitely estimated. In activity it stands between Merck's digitoxin and true digitalin. No

¹ Medical Record, March 24.

² Lancet, October 21, 1899.

³ Centralb. für inn. Med., July 8, 1899.

toxic symptoms have been observed from its use. Eighty to 100 minims is the maximum daily amount recommended, or 6 to 10 drops for a dose. Its action upon the heart and kidneys was most satisfactory ; but, as with the usual preparations, often not manifested for two to four days. This mode of preparation has the advantage of absolute non-interference by chemicals or by heat. The value of the drug must clearly vary with the quality of the plant.

GUIDES IN USING OR WITHHOLDING DIGITALIS. The broader lines of this subject are the easiest to understand and also the safest to follow. First, is the case one of purely functional or of structural affection? A young and healthy heart bears digitalis well in moderate amounts and even in large quantities, but with a seriously diseased heart it is otherwise, and we shall feel more hesitation in prescribing digitalis than when the function only is disturbed.

1. *Even in the "functional" group* the administration is not a matter of indifference nor always without risk. There are two classes, according as the rate of the heart or its rhythm are at fault.

(a) If the rate, as in bradycardia, be abnormally slow, digitalis should not be prescribed. In tachycardia apart from valvular disease a slowing agent is indicated ; but whether this is to be digitalis must depend upon the cause. Often digitalis is a useful adjunct in relieving the dilatation which is inseparable from a rapid and feeble action, and which sometimes has a share in causing the tachycardia ; but in the majority the real causes are some undue irritation external to the heart and an undue irritability inherent to it. A symptomatic treatment by soothing remedies (generally including bromide) and by supporting remedies is the first indication until we have traced the disturbance to its individual cause.

(b) Arrhythmia pure and simple is most often functional and due to outside influences, toxic or mechanical. In both cases irritability is the manifest feature. If tea, coffee, or tobacco upset its nerves our interference with the heart by heart poisons should be most guarded, lest their effect should be likewise exaggerated. Irritability is an evidence of weakness, to be treated not only by removing the irritant, but by resting, comforting, and encouraging the disturbed organ. The discipline of increased rhythmic rest and increased rhythmic tone is the great indication to be fulfilled by the steady use of small doses of digitalis. This is from the cardiac side of the question—one which is seldom overlooked ; but there is the other side—that of the disturbing agent. Not infrequently the condition, as in dilatation of the stomach, is chronic and almost incurable, and in these cases the plan suggested of raising the strength of the heart may enable it to put up with its difficulties and to throw off some of its nervousness ; but no permanent cure can be obtained so long as the primary trouble remains unrelieved.

2. *Organic disease* in general, so long as it is fully compensated, is best treated prophylactically by periods of rest, by steady avoidance of strain, and by general tonics. Unevenness of the pulse without excessive rapidity, but with regular recurring periods of irregularity, is typical of mitral reflux in the compensated stage. This systematic irregularity is the heart's *modus vivendi*, its method of "negotiating" the difficulty of the impeded circulation. So delicate an adjustment will not bear any rough handling, and except in the smallest tonic doses digitalis might do harm. The same applies to the other valvular affections, particularly to mitral stenosis and to aortic stenosis in their fully compensated stage. In aortic reflux, with its steady tendency toward dilatation, some advantage may be gained by periodical courses of physical rest and of digitalis.

(c) *In loss of compensation* the peculiarities of the mitral regurgitant pulse are intensified, and abnormal rapidity is superadded. Digitalis is indicated, but we must guard against mistaking some of its cumulative effects; for instance, smallness and rapidity of the pulse, vomiting, etc., for symptoms of the disease. Vomiting is the danger signal; but we should stop short before it is within sight, and this may be done by watching the pulse. If, after an original slowing, the rate again rises without obvious cause, this is probably due to the digitalis, and this risk of overadministration is an argument in favor of the intermittent plan.

(d) We are exposed to the same mistake in the other condition where digitalis is most indicated—*general dilatation of the heart*. The rapidity of the pulse due to the disease may run on to that which too much digitalis will produce—a serious danger in these cases, which are always precarious.

(e) *In uncompensated mitral stenosis*, with its rapidity and irregularity, this difficulty is less likely to arise. The danger from digitalis is, at an early period, from undue slowing of the rhythm. This slowing should lead at once to the stoppage of the administration; unremitting attention to the pulse is, therefore, needed. Slowing of the heart to 85 per minute is our guide for immediately suspending the treatment.

(f) *In aortic regurgitation* with advanced loss of compensation, dilatation and cardiac debility are the difficulties, and digitalis may be of signal service, yet not in all cases. Our indication for its avoidance is anginal pain, which will be made worse by digitalis, and calls for a sedative treatment and for those heart tonics which do not encourage peripheral resistance.

(g) *In aortic valvular stenosis* of high degree the problem of treatment is almost insolvable. By prolonging the diastole digitalis cannot fail to add to the disproportion between the contracted outlet and the growing excess of the ventricular change. When acute dilatation of the ventricle supervenes, and with it a change from the slow to the rapid run-

ning pulse, it has a warrant, and it may give temporary relief, particularly if combined with drainage of the anasarca, whereby the circulation is eased by a reduction of the bulk of the blood.

In conclusion, it may be gathered that our caution against digitalis in stenosis, either at the periphery or at the centre, and that dilatation of the heart or of the orifices is the indication for its use; while advanced atheroma, particularly in the cerebral district, is a major objection.

MERCURY IN HEART DISEASE. Mercury is of all our remedies for the advanced symptoms that which is most generally useful; for, unlike others, it is seldom contraindicated, and almost invariably does good. As pointed out by A. Morison,¹ its virtues are especially conspicuous in cardiac dropsy with hepatic enlargement. Its strong diuretic action had been demonstrated by Finkelstein and Landau. Syphilis of the heart would also be an indication of its use, although when fibrosis has resulted no remedies can avail.

Finkelstein's diuretic method is the exhibition of $\frac{1}{5}$ to 1 grain of calomel every two hours (amounting to 1 to 5 grains daily) for four days, subsequently combined with digitalis powder. Diarrhoea or ptyalism rarely result and readily cease on stopping the drug. Diuresis sets in on the fourth or fifth day. It is important to note that calomel and digitalis act best when taken together. The calomel acts better in mitral than in aortic cases, and is useless in nephritis of non-cardiac origin (Morison).

Wallace Beatty² enumerates the cases where mercury is of real value: (1) General venous engorgement from chronic primary mitral disease, with back pressure; (2) general venous engorgement from mitral incompetence secondary to old-standing aortic disease; (3) dilatation with general dropsy, but no murmur; (4) general venous engorgement from failure of the right heart in emphysema and bronchitis; (5) general venous engorgement from the late cardiac dilatation of Bright's disease. Mercury acts as a purgative and as a diuretic, and if the purgative action should not be too great $\frac{1}{2}$ grain of calomel is given in a pill with digitalis and squill every four hours night and day for ten to fourteen days. Another set of pills, containing in addition $\frac{1}{8}$ to $\frac{1}{2}$ grain of powdered opium, may be kept in reserve and substituted for the first whenever diarrhoea sets in. The improvement is manifest in a few days with the onset of diuresis.

CAFFEINE is perhaps more readily prescribed than our knowledge of its action hitherto warrants. Zenetz³ condemns it as a poison acting upon

¹ *Lancet*, October 28, 1899.

² *Dublin Journal of Medical Sciences*, October, 1899.

³ *Wiener medicinische Wochenschrift*, December 9, 1899; *Epitome, British Medical Journal*, March 3, 1900.

the spinal cord and upon the striated and cardiac muscles, like strychnine; accumulating, like digitalis, owing to a remarkably slow excretion (lasting for ten to fifteen days after the last dose), and slowly inducing a steady rise in blood-pressure, which in cardiac and renal patients culminates on the fourth to the sixth day in the symptoms of impending cardiac tetanus. In three cases of sudden death after its use the heart was found in a state of extreme contraction. All renal diseases and those cardiac diseases which are associated with atheroma or arterio-sclerosis absolutely forbid its administration, and another objection to its use is the great individual variation in the toxic dose.

Zenetz's warning is worth noting, for in severe renal and cardiac disorders it is easy to mistake deleterious drug symptoms for those of the disease. Before ordering caffeine I am in the habit of inquiring whether the patient has any idiosyncrasy for coffee. This is probably a good clinical rule, but not perhaps an adequate protection against possible disaster.

Huchard¹ has no misgivings, and holds the drug in favor. Where digitalis fails to act on a damaged myocardium he injects caffeine with sodium benzoate and water subcutaneously as a cardiac and general tonic and as a diuretic, acting, unlike digitalis, directly upon the renal epithelium. In grave cardiac weakness, as in that of infective fevers, it is superior to digitalis, but may need to be associated with injections of camphorated oil. In renal disease it is also superior to digitalis, and in failing heart it may be used as a general tonic to lead up to the administration of digitalis. When coupled with injections of ether it is, according to Huchard, of much service in acute renal conditions.

SPARTEIN SULPHATE. Thomas² has endeavored to settle the prevailing doubts of the action of this drug on the heart by experiments on rabbits, and his conclusions are that spartein slows the heart, as most other observers are agreed; and that this is, as maintained by Cushny and Mathews, the result of a direct action upon the myocardium. The rise in blood-pressure is largely due to the same cause, but vasomotor effects are not entirely excluded. The division of the vagus or its paralysis by atropine does not stop the effects.

Sparteín sulphate has been found useful by P. M. Chapman³ in passive dilatation of the heart, especially without marked valvular lesion. In a case of advanced dropsy from dilated right ventricle and arterial degeneration, with pulse 130, when the patient was apparently dying in spite of digitalis, 20 minims of the tincture of the perchloride

¹ *Medec. Mod.*, February 17; *Epitome*, British Medical Journal, March 17, 1900.

² *Revue Méd. de la Suisse Rom.*, December, 1899; *Epitome*, British Medical Journal, January 27, 1900.

³ Birmingham Medical Record, May, 1899.

of iron, with $\frac{1}{2}$ grain of spartein sulphate every four hours, enabled the patient to sit up in two days. Another patient had taken it continuously for nearly a year for dyspnoea in aortic valvular disease. The dose is $\frac{1}{2}$ to 1 grain every four hours. It has a slight purgative effect, and is diuretic.

SOME SPECIAL THERAPEUTIC AGENTS.

The past year will not be known by any great innovation, but by the growth of three important methods. One of them—the saline infusion—although largely used in diseases of the circulation, has an exceedingly wide scope as a life-saving agency. Another method, originated for a purely local purpose—the cure of aneurism—but now spreading over a considerable field of practice, consists in the employment of gelatin—a substance which had long ago been rejected, after a trial, as inert, both as a food and as a medicine. A third advance belongs to the group of organotherapy—the increasing use of the suprarenal extract. Special notice will be taken of these in due place.

In *pharmacology* the most important recent improvement¹ is the determination by physiological assay of the strength of our drugs. The potency of the following drugs can be estimated: Digitalis, strophanthus, convallaria, cannabis indica, ergot, elaterium, and cocaine, and none of them should if possible be used the strength of which has not been tested. Others will doubtless be added to the list.

Saline Infusion. The efficacy of this method as a restorative has been placed beyond doubt, but the mechanism of the relief is still unexplained; it is probably partly mechanical by hydrating and thinning the blood and by widening the channels of circulation, and partly biochemical by its action upon blood cells and tissue cells in the direction of an improved oxidation and intracellular metabolism, while increased intercellular irrigation favors the excretion of poisonous waste products.

Lawson Tait's method of flushing the peritoneum acts in the same way by causing the absorption into the circulation of a quantity of fluid. An agent sufficiently potent to stay the hand of death must have yet greater capabilities in conditions where nature is not exhausted and needs slighter help. Already surgeons are learning to use it prophylactically (Kocher) to ward off the collapse which it had hitherto been only expected to cure. Häberlin,² who quotes Sahli and Lejars,³

¹ George F. Butler. *Medicine*, 1899, vol. v.; *American Journal of the Medical Sciences*, February, 1900.

² *Münchener medicinische Wochenschrift*, 1900, No. 2.

³ *Építome*, *British Medical Journal*, 1896, ii., parag. 11.

and refers to the employment of it by Cantani, of Naples, in the cholera epidemic of 1865, states in general terms that infusion is indicated whenever more blood is required, owing to depletion or to a diminished intake, whenever the blood and the tissues are overcharged and the nervous centres oppressed by poisonous agents, and whenever cardiac energy is impaired and glandular activity diminished. Thus in acute anæmia, whether surgical or puerperal, in dehydration set up by diarrhœa, vomiting, or inability to swallow, and, again, after operations upon the stomach and intestines, and, lastly, in various intoxications and acute infections as a means of diluting the poison, saline infusion is likely to be more and more in demand in general practice.

Illustrative instances from the department of gynecology are given by Ostermayer¹ and by Georgii.² Again, in various forms of acute poisoning (by CO, CO₂, chlorate of potassium, boric acid, iodoform, nitrobenzol, carbolic acid, etc.) the injection may be preceded by a venesection, and restorative measures are to be combined with it (hot applications and hot drinks, lowering the head, an injection of camphor in ether). In poisoning by phosphorus turpentine-water may be added to the saline infusion (Georgii).

The technique is simple, but needs scrupulous antisepsis. Boiling water is added to cold sterilized water until the temperature is 100° F. A drachm of salt is dissolved in each pint and the solution suspended at suitable height and conveyed under the skin by an aseptic India-rubber tube and aspirating needle. The thigh, thorax, or abdomen may be the place selected. In this way from 1 to 10 pints may be infused in the course of a day.

E. O'Neill Kane's³ simple device of using a branched tube with multiple needles is an obvious improvement where, as in shock, the remedy has to be quickly applied, as two to four quarts can by this method be introduced within half an hour.

It should be noted by way of caution that abscess has been set up in some cases, but in Robert Jardine's⁴ experience of infusion for eclampsia, etc., there had not been one abscess in 200 cases. On the other hand, Soupault and Guillemot⁵ relate two cases of gaseous abscess, running a benign course, following hypodermatic injections.

A NEW SALINE-INJECTION MIXTURE has been recently put upon its trial clinically. The theoretical advantage which A. Schieking⁶ claims

¹ Centralblatt für Gynäk., 1899, No. 12.

² Münchener medicinische Wochenschrift, 1899, Nos. 27 and 28.

³ Journal of the American Medical Association, December 23, 1899, and March 3, 1900.

⁴ British Medical Journal, March, 31.

⁵ Société Médicale des Hôpitaux, February 23.

⁶ Therap. Monats., December, 1899; Epitome, British Medical Journal, February 3, 1900.

for the new injection, consisting of sodium chloride (0.7 per cent.) and of sodium saccharate (0.03 per cent.), is its power of freeing asphyxial blood from its excess of carbon dioxide—a function which has recently been shown to be normally performed by the alkaline globulin of the blood, which is transformed into alkaline carbonate and free globulin. Sydney Ringer states that the addition of calcium chloride and other salts to the saline solution improves the heart's action. This result is also brought about indirectly by the saccharate of sodium. This is a gelatinous, slightly bitter substance, readily broken up into sugar and sodium carbonate in the presence of CO_2 . The saccharate must be strictly pure, free from uncombined sugar or sodium hydrate. The good results obtained in frogs and warm-blooded animals reduced to a state of collapse encouraged Schieking to try it clinically; only good effects were noticed, and the solution was efficacious in patients who had not been benefited by other injections. This method seems worthy of a further trial; but it should be borne in mind that a removal of an excess of carbon dioxide from the blood is but a small part of the purification required. More deleterious are the unextracted poisons apt to cling to the tissue and to the blood and needing to be washed out and to be met by suitable antidotes or by the indirect effect of a counter-vailing stimulation of the powers of resistance.

INTRAVENOUS INJECTIONS are falling into disuse, but it is claimed that they are deprived of the danger of the introduction of air into the circulation by a device suggested by Julian Y. Genella.¹ He applies a triple ligature, the middle one left untied, and under this the point of the needle is introduced. This enables fluid and air from the syringe to escape at first by the side of the needle, and while the fluid is running the middle ligature is secured around the latter, and, the proximal ligature having been untied, transfusion proceeds with safety.²

“INACTIVE SERUM” FOR SUBCUTANEOUS INJECTION. Friedenthal and Lewandowsky's³ experimental study must be regarded as merely provisional in view of a possible call for infusions of sterile serum in the future. There is clearly much to be said in favor of serum being the most appropriate fluid for infusion, as it may also be regarded as a food, if only it can be safely injected and duly absorbed. They find that as much as 99 per cent. of the serum injected is absorbed; and safety can be insured by the method which they have adopted. Serum from one animal species is poisonous to other species; but in the case of rabbits' serum injected into other animals all poisonous effects are suppressed by heating the sterile serum to 55° or 60° C., when it be-

¹ New York Medical Journal, May 27, 1899.

² Epitome, British Medical Journal, July 1.

³ Berliner klinische Wochenschrift, March 20, 1899.

comes slightly opalescent. Control animals treated with the same serum without preliminary heating died. For the production of this "inactive serum" they recommend keeping up the heat at 58° to 60° C. for two hours. The intravenous or intraperitoneal method is not to be recommended in man, but the subcutaneous method only.

A similar line of thought is suggested by Van de Velde's¹ experimental injections of horse serum into rabbits. The rapid passage of the serum into the tissues and exudates was demonstrated by the œdematous fluids of the rabbit having almost immediately acquired the anti-leucocytic power special to the horse's serum.

HYPODERMATIC FEEDING, if found to be safe, would be a valuable resource. The method used by Muggia,² of Turin, consists in the injection of a preparation of yolk of egg and in slight massage of the region injected. In the anæmia and athrepsia of infants the body weight and the percentage of hæmoglobin increase. The number of red cells also rises much more readily than if lecithin had been administered in the same way. The yolks of freshly laid hen's eggs carefully washed before opening are received into a sterile glass vessel, weighed, and mixed with a third of their weight of physiological salt solution. The mixture, thoroughly stirred up with a glass rod, is filtered through aseptic absorbent gauze, and the bright-yellow liquid can now be injected into the buttocks or loins, beginning with about 1 c.cm. and increasing this to 10 c.cm. Not less than twenty injections of at least 5 c.cm. per dose should be administered.

Gelatin Subcutaneous Injections. During the last year these have been tried for various conditions besides aneurism, viz., internal hemorrhage, hæmoptysis, hæmaturia, intestinal hemorrhage, and purpura. Curschmann³ has employed them in six cases of hæmatemesis, in six of hæmoptysis, one of typhoid intestinal hemorrhage, and one of hemorrhoids, with quick subsidence of the hemorrhage in thirteen of these cases. Heymann⁴ claims to have arrested a persistent hemorrhage after tonsillotomy in a hæmophilic patient by three injections (140 c.cm., 240 c.cm., and 160 c.cm.) of a 2.5 per cent. solution of gelatin in normal saline fluid. The arrest of cholæmic hemorrhages after operations on the biliary passages has been witnessed by H. Kehr.⁵ Pensuti⁶ uses the gelatin treatment in dysentery and in various hemorrhagic affections. His solution, though highly concentrated (30 per cent. of gelatin,

¹ *Presse Médicale*, January 3 or 10.

² *Rev. Mens. des Mal. de l'Enfance*, May, 1899; *Epitome*, *British Medical Journal*, September 30, 1899.

³ *Leipzig Medical Society*, February 7; *Medical Record*, June 10.

⁴ *Münchener medicinische Wochenschrift*, August 22, 1899.

⁵ *Ibid.*, January 30.

⁶ *Gaz. degli Osped.*, March 4, 1900.

with the addition of 1 grain of carbolic acid to every c.cm.), is said to be painless. He injects only 2 or 3 c.cm. once or twice a day into the nates.¹

AS A LOCAL HÆMOSTATIC gelatin has been used with success by J. B. Nichols² in a case of hæmophilia. A strong solution of gelatin (5 to 10 per cent., with 0.6 to 1 per cent. calcium chloride in 100 parts of water) was applied, and this immediately arrested the intractable hemorrhage. Various other hemorrhages might be controlled by its use. For instance, Polyakoff has given it by the mouth in a case of gastric ulcer, and I have administered it as the only food by the mouth in a patient with recurring hæmatemesis fed by rectal alimentation. Nichols supplies a bibliography with the report.

THE PROPHYLACTIC USE OF GELATIN before operations is suggested by Kaye.³ The needle is to be introduced in several places and the limb bandaged to accelerate absorption. In all the cases treated there was some rise of temperature. The muscular tissues on incision are said to have been drier than usual and abnormally glistening in aspect. At the operations there was less capillary oozing, but the same bleeding from arteries and veins as usual. Soft clot was readily formed at the surface of the wound. Jabouley⁴ injects into the field of operation 200 grammes of decinormal salt solution containing 5 grammes of gelatin. No vessels will then need a ligature or clamp.

The technique has not been absolutely uniform. The quantity has varied from 25 c.cm. to 250 c.cm., but the strength of the solution has not exceeded 2 per cent. Lancereaux and Paulesco's large injections (200 c.cm.) contained 2 per cent. gelatin and 0.7 per cent. sodium chloride, while Huchard's injections for aneurism (25 to 50 c.cm.) contained 2 per cent. gelatin and 7 per cent. sodium chloride; for hæmoptysis his 50 c.cm. injections contained 0.7 per cent. gelatin and 1 per cent. sodium chloride. The method which I adopt is to keep thoroughly sterile a series of flasks, each containing 10 c.cm. of a 10 per cent. gelatin jelly. Into one of these 40 c.cm. of boiling water is poured before use, making up the bulk to 50 c.cm.; and after cooling to 100° F. the contents are injected by slowly pumping air into the flask with an India-rubber handball; the perforated India-rubber stopper armed with a long and short tube, the injecting needle having been carefully sterilized beforehand.

The directions suggested in the *Therapeutic Gazette*, January, 1900, are to dissolve 18 grains of gelatin and 18 grains of sodium chloride in

¹ Epitome, British Medical Journal, April 21, 1900.

² Medical News, New York, December 2.

³ Medical Press and Circular, November 22.

⁴ La Sém. Med., 1898, No. 56; Medical Record, July 29.

2 ounces of distilled water, half of this to be injected with an antitoxin syringe every day or every other day for aneurism. In other urgent cases two injections might be given in one day.

The interval between successive injections was originally directed to be not less than a week, but it will be seen that this rule has been departed from.

The sterilization is obtained by keeping the solution at a temperature of 100° C. for fifteen minutes on three successive days. The addition of a small quantity of solution of mercuric chloride has been suggested as a further safeguard.

The complications apt to arise from the injections are (1) feverishness, with or without rigors, for the first day or two; (2) local pain and tenderness; (3) diffuse redness of the skin and (4) some induration.

We must repeat the caution that in conducting the subcutaneous injections of gelatin the neighborhood of large veins should be avoided, since an entrance of the fluid into the circulation would probably be fatal.

Suprarenal Extract. This has been recommended for varied uses—hay fever (Solis-Cohen), hæmoptysis or hæmatemesis, surgical operations and intranasal vascular turgescence (Yearsley and others). A 5-grain tablet dissolved in a drachm of glycerin (Lederman, Yearsley) can be tested on a healthy mucous membrane. After a five to fifteen minute application the region of the turbinated bone becomes pale and remains ischæmic for one-half to two hours. Its diagnostic use is of special value in nose and throat cases, but is by no means limited to them. It produces¹ in the living animal: (1) Extreme contraction of arteries of peripheral origin; (2) rapid rise of blood-pressure; (3) marked central nerve stimulation; (4) acceleration and augmentation of the contractions of the auricle and ventricle after section of vagi; (5) only slight affection of respiration, which becomes more shallow.

Lermitte² had had good results in epistaxis.

Rhachitis has also been successfully treated (seventy-six cases) by Stöltzner,³ all the symptoms being relieved except the laryngeal spasm.

Following up Schäfer's results in *epistaxis*, Grünbaum⁴ suggests that *hæmatemesis* might be controlled by this means, provided it were not kept up by a rise in pressure. Oliver's sphygmodynamometer showed in his own and in another subject's pulse that no rise occurs after 10, 20, and 30-grain doses, and that we possess in the extract an ideal hæmostatic for hemorrhages in the alimentary canal or in the bladder.

¹ Therapeutic Gazette, February, 1900.

² British Medical Journal, February 25, 1899.

³ Berliner klinische Wochenschrift, September 11, 1899.

⁴ Journal of Physiology, May 11, 1899.

A. G. Aldrich's¹ solution for surgical use for the eye, ear, nose, and throat is :

Suprarenal extract	1 part.
Boric acid	1 "
Sterilized water	48 parts.

To be made up fresh and filtered. The local action lasts twenty to sixty minutes.

FOR THE PREPARATION OF THE EXTRACT, M. D. Lederman² adds 10 grains of the gland to a drachm of 1 in 4 glycerin and water. This is shaken and the solution filtered after two days. He finds that formalin, carbolic acid, corrosive sublimate, and boric acid all inhibit the vasoconstricting power of the gland.

EPINEPHRIN ($C_{17}H_{15}NO_4$) is described by John Abel³ as a base contained in the adrenal substance (1 in 10,000). Strangely the salts only are active (not epinephrin itself) in raising arterial pressure and in first stimulating and subsequently paralyzing the respiratory centre; in larger doses the heart itself is paralyzed. The conjunctival vessels contract at once and lastingly under its local application.

Hydrotherapeutics, besides their constitutional effects, possess a direct influence upon the heart and vessels, which are analyzed by S. Munter.⁴ While undue heat does harm, as formerly applied by Vincenz Priessnitz, the Gräfenberg farmer (born in Austrian Silesia, in 1799, died in 1851; founder of the "water cure," which was suggested to him by noticing a wounded deer bathing and jumping about in the water of the "Priessnitz Brunnlein"); cold acts exactly like digitalis. When compensation is brought about by the latter, cold serves to carry it further. In acute endocarditis cold is useful from the first. The ice-bag ordinarily used acts too powerfully and presses too strongly, and in Leube's cooling tube the lower strata become warm. This is prevented by Munter's cooling flask, with a permanent flow of cool water through it. Pain ceases, the urine increases, and the cardiac activity excitement subsides. Digitalis always assists in cases of delay of compensation. After compensation is set up cold serves as a tonic to the cardiac muscle in conjunction with saline or carbonic-acid baths, cold friction, packs, affusion, or douches according to what is required in each case. Hydrotherapeutics are an energetic means of increasing blood-pressure by local contraction of vessels, while a depletory effect might be produced by their action on the peripheral vessels.

H. Hensen⁵ finds that carbonic-acid baths raise blood-pressure and

¹ Medical Dial, 1899, vol. i., p. 280.

² American Journal of the Medical Sciences, July, 1899.

³ Zeitschrift für Physiol. Chemie.

⁴ Ver. für inn. Med., Berlin, November, 1899; Med. Press and Circular, November 15.

⁵ Deutsche medicinische Wochenschrift, August 31, 1899; Philadelphia Medical Journal, November 4.

usually slow the pulse, but sometimes quicken it. The rise in blood-pressure renders the baths dangerous to those suffering from severe atheroma or from aneurism.

The Nauheim baths are thought by S. Baruch¹ to slow the heart, not merely through reflex stimulation by CO₂, as claimed by Schott, as immersion in a temperature 8° to 10° F. below the normal would drive the blood from the surface into the muscles, increasing the resistance and the tension of the pulse; but the normal activity of the arterioles would at the same time relieve the heart. The redness and tingling due to the salts and to the CO₂ counteract the cutaneous chilliness. An increased elimination of toxins, owing to stimulation of the excretories, is also part of the relief.

The characteristics of these baths might perhaps be summed up as a combination of the tonic vascular effects of a cool bath simultaneously with that cutaneous reaction and glow which usually follow later.

The effects of baths, massage, and exercise on the blood-pressure have been studied with Oliver's hæmadynometer by Edgecombe and Bain,² with results of much practical importance. Whereas cold baths raise the blood-pressure, this is lowered by hot baths of plain water, and, moreover, saline baths at warm temperatures lower the arterial pressure to a greater extent than plain water baths at the same temperatures; the venous pressure is raised relatively to the fall in arterial pressure. When the saline material is increased or when effervescence is added (Nauheim bath), a further lowering of arterial pressure takes place, while the venous pressure becomes absolutely raised. Dry massage lowers arterial and raises venous pressure, but when the abdomen is massaged the general pressure is raised by the discharge into the systemic circuit of blood accumulated in the splanchnic area. In the same way Vichy douches raise arterial pressure, the patient being recumbent while the needle plays upon him, whereas the Aix douche lowers arterial and raises venous pressure to a greater extent than dry massage. The effect of exercise on blood-pressure depends upon the work done.

Some of the beneficial effects of the Nauheim baths are probably due to the direct inhalation of the carbonic-acid gas which accumulates at the surface of the water. Ewart³ has shown in his paper on "The Prebalmear Treatment of Heart Disease," etc., that this advantage may be secured for patients at a time when they are unable to leave their beds by causing them to inhale carbonic-acid gas as a preliminary to the balnear treatment; and that the inhalation is a source of consider-

¹ Medical Record, June 10.

² Journal of Physiology, vol. xxiv., No. 1; Epitome, British Medical Journal, August 5.

³ British Medical Journal, October 28, 1899.

able relief and improvement in cases of cardiac dyspnoea and of anginoid pain, both as a sedative and as a respiratory stimulant.

The Local Use of Ice in Heart Disease. Robardet's¹ thesis deals with the indications and the contraindications of ice. Pericarditis, endocarditis, and especially myocarditis, pseudo-angina, and some cases of tachycardia are benefited, and in some cases of arrhythmia regular action may result from a single application. He regards aortitis, atheroma, aneurism, or thinning of the aortic wall from any cause as contraindications. This view, however, will not be shared by all clinical observers.

The Climatic Treatment of Heart Disease. *High altitudes* are not, in the opinion of Babcock,² contraindicated in all varieties. The acceleration of the venous flow, and consequently of the cardiac action, being the result of rarefaction, altitudes are unsuitable for pronounced aortic and mitral stenosis and for regurgitant disease complicated by pleural and pericardial adhesions. But uncomplicated regurgitant lesions and arterio-sclerotics, with or without myocardial changes, are tolerant of low atmospheric pressure.

The danger of high altitudes (of 3000 to 4000 feet and above) in arterio-sclerosis, especially when the ascent is rapid, as in mountain railways, is dwelt upon by T. Findlater Zangger.³ Collapse, angina, cardiac failure, or apoplexy may appear after the railway excursion, when the patient is back in the lowlands. Zangger suggests that in apoplexy several things, slight in themselves, combine with the influence of the altitude to produce the result—*e. g.*, overfeeding, overexertion, insolation, irregular or insufficient relief of the bowels; and he advocates a vegetable diet, with mineral waters, avoidance of stimulants and of exercise in the heat of the day, particularly in shut-in valleys.

¹ Thèse de Paris, 1899.

² Medical News, July 15.

³ Lancet, June 17 and 24; Journal of the American Medical Association, July 15, 1899.

DISEASES OF THE SKIN.

BY HENRY W. STELWAGON, M.D.

The Role of Pus Organisms. Elliot,¹ in a most admirable paper entitled "The Rôle of the Pus Organisms in the Production of Skin Diseases," covering the important literature of this subject, summarizes the status of this question as follows: "From this brief review of the question—and it is brief of necessity, owing to the enormous literature existing—it cannot but be evident that though micro-organisms, especially the staphylococci and the streptococci, are recognized as being the particular cause of suppuration, yet many other factors of internal and external sources are also allowed to be active in producing the same objective result to which the name of pus is given, but which may or may not be true pus, according to its source and constituents—that is, clinically, pus may appear to be present, but yet clinically it is not possible to determine whether it is true or pseudo-pus. It can also be seen that as far as cutaneous processes are concerned the causal connection between the suppurative lesion and the pyogenic organisms is, with few exceptions, more the result of an *à priori* and an analogical reasoning than of actual demonstration; is more the outcome of the fact that their presence can produce pus than that they did so in those lesions in which they were found. In the large proportion of cutaneous diseases essentially suppurative or secondarily becoming such no constant pyogenic germ organisms have been found by various investigators, but most contradictory results are recorded, and inoculation experiments have not been made, or have been negative, or have failed, or at any rate have not produced the lesion from which the bacteria were obtained. In consequence, when the field is gone over, which I have, I grant, covered only in a restricted manner, but yet sufficiently to bring out the chaos that exists, there is only one positive fact which I would emphasize, viz., the pyogenic micro-organisms, the staphylococci and the streptococci are in general the cause of suppuration, but yet they are not the only cause. Their connection with the production of cutaneous lesions, with the exception of abscess, phlegmon, whitlow, carbuncle, furuncle, and sycosis, rests so far upon a too slender basis for any

¹ Transactions of American Dermatological Association for 1899; Journal of Cutaneous and Genito-Urinary Diseases, February, 1900.

absolute conclusions to be drawn. Unity of observation, unity in regard to the bacteria, and, above all, unity in experimental inoculation and production of the lesion—all are required before a positive verdict can be given that such or such a suppurative process is the result of such and such pyogenic germs, and that it is due to nothing else. When that is done, and it has not yet been done, then we may regard the subject as settled; but until then we are not in a position which cannot be assailed from any and every quarter."

In Gilchrist's interesting researches of over three hundred vesicular and pustular lesions of the skin he found that a special bacillus was the cause of the acne pustule, and also¹ that the streptococcus pyogenes outnumbered staphylococcus pyogenes aureus and albus in the series of pus producers in the cutaneous lesions examined by him. Another fact which this writer's experiments brought forward is that the majority of vesicular lesions of the skin are sterile, showing that other substances, or micro-organisms which cannot be cultivated at present, are the cause of these lesions. Other pus producers which his investigations showed should be added are tinea megalosporon ectothrix and endothrix, blastomycetes, protozoa, and tubercle bacilli.

DISORDERS OF SECRETION.

Hyperidrosis. Hutchinson² reports the case of a woman in whom the slightest indulgence in tea was followed by hyperidrosis of the feet.

TREATMENT. In sweating of the hands Weber³ advises the following:

Borax,		
Salicylic acid	āā	$\frac{1}{2}$ ounce.
Boric acid . . . . .	.	1 drachm.
Glycerin,		
Dilute alcohol	āā	2 ounces.

Apply three times daily.

In addition he advises the continuous electric current.

In hyperidrosis, with or without bromidrosis, Grosse⁴ strongly commends a powder consisting of 1 part tannoform and 2 parts Venetian talc. Ullman⁵ also indorses this application. The parts are washed and the powder applied freely. It suppresses the odor, and is without

¹ Transactions of the American Dermatological Association for 1899.

² Archives of Surgery, 1899, vol. ii., p. 56; Monthly Cyclopædia of Practical Medicine, November, 1899.

³ Journal des Praticiens, 1899, Nos. 9 and 10.

⁴ Klinische Therapeutische Wochenschrift, 1899, Nos. 16 and 17.

⁵ Centr. f. d. ges. Therapie, May, 1899; Journal des Maladies Cutanées et Syphilitiques, 1899, p. 40.

danger. In rebellious cases he advises a plaster containing 25 per cent. of tannoform, which he considers preferable to Hebra's classic plan with diachylon ointment.

Weber¹ treats foot sweating as follows: Foot washing twice daily in decoction of oak bark or walnut leaves, with the addition of alum, borax, and benzoin tincture. The socks are powdered inside with the following:

Potassium permanganate	3 parts.
Sodium salicylate	2 parts.
Bismuth subnitrate,	
Talc	40 parts.

Or the following:

Salicylic acid	1 part.
Powdered alum	9 parts.

Grimm² praises highly a powder consisting of 1 part æthal (acetyl-alcohol) and 5 parts boric acid; or it may be prescribed with talc in the same proportion.

INFLAMMATIONS.

Urticaria. Carageorgiades³ has noticed at the decline of serofibrinous pleurisy a more or less intense hive-like eruption. It takes place at the time of the absorption of the effusion, attaining its maximum at the end of three or four days, remains stationary about the same length of time, and disappears more or less rapidly. He believes it is due to the intoxication of the organism by toxins which are thrown into the lymphatic circulation during the work of absorption. It would seem to me that this eruption was more in the nature of a toxic erythema multiforme.

Roth⁴ reports a case of recurrent urticaria associated with albuminuria, in a child of three and a half years.

Merx⁵ gives the details of a case of urticaria involving the throat, with urgent symptoms, while Packard⁶ has reported several cases, and cites others from the literature, showing apparent connection between respiratory disturbances and urticarial lesions of the skin.

TREATMENT. Du Castel⁷ has seen good results in some cases from the use of lactic acid, in varying doses from five to thirty drops, largely diluted.

¹ Loc. cit.

² Dermatologische Zeitschrift, 1899, vol. vi., No. 2.

³ Society Transactions, Journal des Maladies Cutanées et Syphilitiques, October, 1899.

⁴ Monatshefte für praktische Dermatologie, 1899, vol. xxi., No. 2.

⁵ Münchener medicinische Wochenschrift, 1899, No. 36.

⁶ Society Transactions, Philadelphia Medical Journal, July 22, 1899.

⁷ Journal des Praticiens, 1899, No. 19.

Lyon¹ advises in urticaria apparently due to chronic auto-intoxication from the digestive tract :

Sodium bicarbonate	5 drachms.
Magnesia	75 grains.
Powdered belladonna root	4 grains.
Divide into twenty powders.	
One at meal time.	

In cases in which there is a rheumatic basis he prescribed lithium carbonate, lithium benzoate, or sodium salicylate in small doses. For urticaria of distinctly nervous origin ammonium valerianate is advised.

Externally Skinner² speaks favorably of :

Hamamelis water	2 ounces.
Sea-salt	$\frac{1}{2}$ ounce.
Distilled water	1 pint.

To be applied freely.

Burns and Scalds Picric acid continues to be commended for the treatment of burns. Dakhyle³ claims that it is harmless to children and adults—a conclusion, as regards the former at least, which does not agree with previous reports by others of occasional accidental poisoning. He recommends that the parts be kept antiseptically clean with a 1 per cent. solution. In sunburns of superficial character excellent results, he states, are obtained with painting the part with a saturated solution in ether or alcohol. Donald⁴ applies gauze wet with a saturated aqueous solution, and over this places absorbent wool, and covers all with a gauze bandage. He believes that this treatment has many advantages over other methods usually employed. Reckett⁵ likewise extols it, and states with its use burns of the first and second degree heal rapidly and without suppuration.

Milligan⁶ also thinks well of picric acid, as a 0.5 or 1 per cent. solution, in burns of the first and second degree, although he favors the following dry dressing :

Powdered camphor	2 $\frac{1}{2}$ drachms.
Prepared chalk,	
Magnesium sulphate	1 ounce.

Alger⁷ prefers the combination devised by Esbach some time ago, consisting of :

¹ Rev. de Ther. Med. Chir., 1899, p. 326 ; Journal des Maladies Cutanées et Syphilitiques, May, 1899.

² British Journal of Dermatology, June, 1899.

³ La Progrès Médicale, January 7, 1899.

⁴ British Medical Journal, May 13, 1899.

⁵ Ibid.

⁶ Physician and Surgeon, 1899, vol. xxi., p. 82 ; Monthly Cyclopædia of Practical Medicine, February, 1900.

⁷ Therapeutic Gazette, June 15, 1899 ; Monthly Cyclopædia of Practical Medicine, February, 1900.

Picric acid	. . . . .	10 parts.
Citric acid	. . . . .	20 parts.
Water	. . . . .	1000 parts.

Roelig¹ has had good results from the use of a 10 per cent. aristol salve; it lessens the pain and hastens the healing process, and Müller² uses with good effect applications of pure ichthyol, over which he dusts talc powder, and over this places wadding and a bandage.

Dermatitis Medicamentosa. BROMIDES. Elliot³ reports a case of bromide eruption of a fungating, papulo-pustular character, in a baby nine months old, in whom the lesions continued to come out for a number of weeks after the discontinuance of the drug. My own experience agrees with that of Elliot and several of the gentlemen taking part in the discussion of this case, that the persistent tendency to outbreak, with the bromide, after the drug has been discontinued, is not extremely rare, especially in young children.

IODIDES. It is well known that the iodides may provoke various skin lesions, mild to grave. Neumann⁴ adds a case of tuberous and nodular lesion involving the face of a patient with uræmia who had been given an iodine preparation, and in whom the autopsy disclosed a similar condition involving the pyloric region of the stomach. It seems to be particularly in albuminuric conditions, as Neumann remarks, that the grave forms of iodide eruption are encountered. A somewhat similar case is that recorded by Milian⁵ in a patient with Bright's disease and hemiplegia, to whom was given some iodide; an eruption of a nodular and bullous character developed on the face. Under symptoms pointing toward grave lung affection the patient succumbed. At the autopsy a similar condition to that of the face was found in the stomach.

Severe purpuric lesions may also be produced by the ingestion of this drug. Milian⁶ records a case in which the mouth was the seat of purpuric lesions. The patient was given full doses (90 grains daily of potassium iodide), and after taking the remedy for six days large, red ecchymoses presented themselves on the palate; these disappeared when the iodide was discontinued, to reappear later upon the resumption of the drug.

Usually iodide eruptions appear soon after the drug has been prescribed, but it would seem by the exceptional cases referred to by For-

¹ Deutsche medizinische Zeitung, 1899, No. 56; Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 10.

² Aertzliche Rundschau, 1899, No. 21; Monthly Cyclopædia of Practical Medicine, December, 1899.

³ Society Transactions, Journal of Cutaneous and Genito-Urinary Diseases, 1889, p. 35.

⁴ Archiv für Dermatologie und Syphilis, 1899, vol. xlviii., No. 3.

⁵ La Presse Médicale, 1889, p. 193.

⁶ Ibid.

dyce¹ and Dade² that the eruption may not appear until the drug has been discontinued, although it may have been taken for some time.

In an interesting paper Lyon³ goes over the different forms of the eruptions due to the iodides and the relative causative agency of the different salts, quoting the researches by Briquet. Ammonium iodide causes eruption in 15 per cent., of which 14 per cent. represent the acne type; strontium iodide and potassium iodide stand alike, each causing eruptions in 14 per cent., of which 10 per cent. are of the acne type. The sodium salt is the least likely to provoke cutaneous lesions, in the experience of both Lyon and myself, being provocative in only 10 per cent., of which 9 per cent. are of the acne type. This writer also reiterates what has been observed by Neumann and others, that it is especially in patients with weak hearts and defective kidneys that the grave types are apt to occur.

QUININE. It is well known that quinine is often responsible for cutaneous disturbance. Some individuals are extremely susceptible to this drug, as in the case of a young girl reported by Heard.⁴ One-eighth grain sufficed to cause an acute universal erythema with desquamation. Simpson,⁵ in the discussion, referred to a similar case, suffering general desquamation, including the nails.

The case recorded by Chomatianos⁶ is interesting. An army officer every time he began to take quinine developed within six hours on the hands and penis erythematous areas, varying in size from a ten-cent piece to that of a dollar. Later these became the seat of blebs and filled with limpid serum. These manifestations appeared with the first dose, but once having been established the remedy did not give rise to any further symptoms.

SALICYLIC ACID. Engman⁷ reports a case of salicylic-acid eruption following the ingestion of full doses of the drug. The eruption was seated upon the face, neck, hands, and forearms; was absolutely symmetrical, even to the smallest lesions, and consisted of red, shiny, smooth, sharply defined, slightly raised patches, ranging from the size of a dime to the palm of the hand, pitting upon pressure, the pit returning very slowly to the level again. Near the centre of each lesion on the hand

¹ Society Transactions, Journal of Cutaneous and Genito-Urinary Diseases, 1899, p. 277.

² *Ibid.*

³ Gazette des Hôpitaux, July 8, 1899; Journal des Maladies Cutanées et Syphilitiques, September, 1899.

⁴ Transactions of the Academy of Medicine of Pittsburg; Philadelphia Medical Journal, October 28, 1899.

⁵ *Ibid.*

⁶ La Grece Médicale, 1899, No. 4; American Journal of the Medical Sciences, August, 1899, p. 231.

⁷ Journal of Cutaneous and Genito-Urinary Diseases, 1899, p. 555.

was a small necrotic area, which looked like a rather large pustule, and when opened emitted a yellow granular substance.

A thorough histological examination gave the following: 1. Dilatation and engorgement of the vessels, with inflammatory changes in their walls; (2) œdema of the tissue; (3) hypertrophy of the collagen; (4) cell infiltration about all the vessels, most marked in the subpapillary region; (5) formation of densely packed areas of inflammatory cells and intracutaneous abscesses; (6) these abscesses may involve the hair follicles secondarily; (7) proliferation of connective-tissue cells along the course of vessels and about inflammatory and abscess areas; (8) deposit of fibrin in certain localities; (9) dilatation of lymph spaces of epidermis, with œdema of epithelium cells; (10) ballooning of epithelial cells; (11) necrosis of epithelial cells in areas with attempt at vesicle formation; and (12) invasion of epidermis by wandering cells.

SODIUM BENZOATE. Hébert¹ records the case of a man in whom, on two different occasions, the administration of sodium benzoate was followed with an extensive eruption, of a markedly itchy character, partaking of the nature of an erythema multiforme and urticaria. Each time it came on after a single dose of the drug; on one occasion after a dose of 18 grains and on the other with 9 grains. The left leg, both upper extremities, and the face remained free. The eruption persisted, with the same characters, for two days, disappearing on the fourth day, giving place to a furfuraceous desquamation.

Dermatitis Venenata. Under this head, as is known, are placed all cases of cutaneous disturbance due to contact with chemical, medicinal, and plant substances.

ARNICA. Arnica has gone deservedly out of use as a prescribed application, but it still is employed as a home remedy, although it is not infrequently capable of producing intense inflammatory symptoms. Several instances of such are referred to by Mouillot,² Bowles,³ and Dale,⁴ in which the cutaneous disturbance was somewhat violent in character, and in Mouillot's case accompanied with febrile disturbance.

ODOFORM. It does not seem to be properly appreciated that the local application of iodoform in certain persons, and especially those eczematously inclined, will often provoke a violent and often persistent dermatitis, which may develop into a rebellious eczema. Idiosyncrasy is probably an element in some instances, as in the case reported by Watkins,⁵ in which a nurse under his care, whenever coming in contact

¹ La Normandie Médicale, January 1, 1899; Journal des Maladies Cutanées et Syphilitiques, March, 1899.

² Society Transactions, British Journal of Dermatology, June, 1899.

³ Ibid.

⁴ Ibid.

⁵ British Medical Journal, May 20, 1899.

with the minutest quantity of the drug, developed an acute dermatitis of a bullous type.

IODINE-VASOGEN. Lipman-Wulf¹ reports a case of severe dermatitis following the use of 6 per cent. iodine-vasogen. The remedy was applied daily to a bubo in the inguinal region; after nine days' use inflammatory symptoms of an œdematous and eczematous character set in, involving first the parts to which the remedy had been applied, next the penis and scrotum, and then spreading to considerable extent to other parts. Itching was intense. The dermatitis lasted for one week, and then gradually declined, its disappearance being complete at the end of another week. I have met with a somewhat similar case due to the use of mercury-vasogen.

ORTHOFORM. The external use of this drug has become very common of late. While often useful, its alleged inoffensiveness is not completely borne out by observation. Brocq² mentions several cases in which various degrees of dermæmic inflammation resulted. Nor is it, as Brocq states, always confined to the region of application. Decker³ also records two similar cases, in which an injury of the hand and finger was dressed with this drug, with resulting severe dermatitis. Miodowsky⁴ prescribed an ointment of 5 per cent. strength for a leg ulcer, and there resulted moist gangrene. Schröppe⁵ records the case of a druggist who on three different occasions after applying the drug developed considerable swelling and irritation of the surrounding skin. Wunderlich⁶ reports four instances where he prescribed orthoform in the form of ointment, and in which disagreeable effects resulted. He states that used in powder form it was without such action. The experience of most of these writers, however, agrees with mine, that the drug, while exceptionally irritating, is useful in many instances and has undoubted anæsthetic properties.

PRIMULA OBCONICA. Our foreign friends, among whom Heuss,⁷ Cooper,⁸ Barton,⁹ and Kirk¹⁰ have reported cases of varying degrees of dermæmic inflammation due to this plant. The cutaneous disturbance is of varying degree, from erythematous to bullous, and even superficially ulcerative. Barton calls attention to the fact that in exceptional instances some days may elapse between exposure and the outbreak.

¹ *Dermatologische Zeitschrift*, 1899, vol. vi., No. 4.

² *La Presse Médicale*, 1899, No. 30.

³ *New York Medical Journal*, November 25, 1899.

⁴ *Münchener medicinische Wochenschrift*, March 21, 1899.

⁵ *St. Petersburg medicinische Wochenschrift*, 1899, No. 13.

⁶ *Münchener medicinische Wochenschrift*, October 3, 1899.

⁷ *Monatshefte für praktische Dermatologie*, 1899, vol. xxix., No. 1.

⁸ *British Medical Journal*, December 2, 1899.

⁹ *Lancet*, June 24, 1899.

¹⁰ *Ibid.*, June 17, 1899

Heuss states that the irritation caused may be chronic and recurrent, due to repeated unconscious exposures, and assuming the type of a chronic, constantly recurring dermatitis, defying all eczematous treatment, and only getting well when the mischievous agent has been discovered; the eruption is usually confined to the hands and face, and presents the appearance of a chronic dry seborrhœic eczema. Women are said to be more susceptible than men, and there is no acquired immunity. Treatment is essentially that of similar types of cutaneous inflammation.

X-ray Dermatitis. The X-ray is not the harmless agent it was at first thought, although its careful employment is limiting its power for evil. Additional cases are being reported from time to time, showing all grades of dermatic inflammation and sometimes tissue destruction. Burt¹ gives notes of an electrician who experimentally exposed himself, especially his hand. At the end of the fourth day the hand began to swell, became red and inflamed, and even the bones were painful. Eight days afterward the bone pains were still increasing in severity, and were scarcely bearable. The swelling remained ten days. Exfoliation followed, and the hair of the part fell out. Some time later it was observed that the nails had begun to turn inward toward the palmar surface; later the nails were cast off, new ones taking their place. The hairs gradually grew again, and seemed heavier than the previous growth.

Pospelow² also refers to a patient who underwent X-ray exposure for examination purposes, and in whom the exposure was followed by falling of the hair.

Plonski³ exhibited before the Berlin Medical Society a case in which scar-tissue formation resulted, with the further development of telangiectases; itching was a constant and increasing symptom.

Lustgarten⁴ exhibited a patient who had been, in a business way, exposed to the rays intermittently for several hours daily; at the end of ten days inflammatory symptoms of the hand and face were noticed; this was followed by more or less necrosis of the skin structures of the hand; some ulceration was still persistent after several months' observation and treatment.

In an exhaustive paper, including references to most, if not all, contributions to the subject, Zarubin⁵ gives a brief *résumé* of the accidents accompanying its use, which comprise chiefly dermatitis of varying

¹ Monatshefte für praktische Dermatologie, 1899, vol. xxviii., No. 9.

² Moskau Dermatological Transactions, Monatshefte für praktische Dermatologie, 1899, vol. xxviii., No. 6.

³ Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 3.

⁴ Society Transactions, Journal of Cutaneous and Genito-Urinary Diseases, 1899, p. 382.

⁵ Monatshefte für praktische Dermatologie, 1899, vol. xxviii., No. 10.

grade, complicated with necrosis, abscesses, etc., alopecia, and in some cases pigmentation of the skin and drying of the epidermis.

Freund¹ believes that with care damaging effects of the X-ray may be avoided; most observers, however, agree that, exceptionally, accidents due to idiosyncrasy will happen in spite of all precautions. One such is reported by Orleman,² who had a personal experience. After a fracture of the femur she was given three exposures of eight minutes each; the Edison apparatus was employed and an eight-inch spark used. Three weeks subsequent to the last exposure a small area of inflammation was noticed, which gradually increased, and was soon followed with the appearance of blisters, and later by a breaking down of the inflamed area, resulting in ulceration. Soon afterward pain set in in the ulcer, and a slough formed over the area.

TREATMENT of the slight X-ray burns is a simple matter, but those similar to the last case are most troublesome, and in this case applications seemed powerless. The slough was then removed by operative method and the parts approximated by stitching, but complete healing did not ensue. Six months after the date of exposure she was put in bed, poultices applied to remove the slough, and the leg placed in a splint; after rest-treatment of this kind for three months final cicatrization took place.

Erysipelas. While searching for the streptococcus of Fehleisen in eight cases at the Philadelphia Hospital, Pfahler³ found a diplococcus in each instance; in one he found in addition a streptococcus, which he believed was due to secondary infection by the streptococcus pyogenes. After going over the various data he summarizes: "In conclusion, I will say that I believe that this diplococcus is a cause of erysipelas or of a disease which in the light of our present knowledge cannot be diagnosed from erysipelas. Koch's postulates have been demonstrated with reference to this organism as follows: 1. I have found this diplococcus in the diseased tissues of eight different cases of erysipelas. 2. I have grown this organism in pure culture upon artificial media in each case. 3. The disease was produced in four rabbits by subcutaneous inoculation. 4. The same organism was obtained from the diseased tissues of the inoculated animals."

It is known that one attack of erysipelas does not protect against another; indeed, the belief is common and doubtless true, as observation seems to show, that one attack predisposes to another. Maclachlan⁴ has found according to his experience that in frequent attacks of ery-

¹ Wiener klinische Wochenschrift, 1899, No. 39.

² New York Medical Record, July 1, 1899.

³ Philadelphia Medical Journal, January 13, 1900.

⁴ Edinburgh Medical Journal, August, 1899.

sipelas the succeeding attacks become milder and less virulent. In two epidemics occurring under his notice and to which he gave careful study, the disease began as cutaneous erysipelas, but afterward cases of cellulitis developed. It is probable, he states, that the two diseases were identical as to cause, but it may be that the different clinical types of the disease are due to different germs. This view seems to have some support in Pfahler's investigations, referred to above.

From the studies by Rey,¹ examination of the blood in erysipelas, whether made during the attack or during the period of convalescence, furnishes valuable information regarding the course of the disease. The curve of the number of leucocytes in a case of erysipelas follows very closely that of the temperature, but this leucocytosis does not show equally throughout the various blood elements. The polynucleated cells show an increase as soon as the malady is established, while at the same time the number of mononucleated cells diminish, such diminution occurring chiefly in the lymphocytes. When recovery takes place it is signalized by a fall in the number of polynucleated cells. The eosinophile cells, which fell in number during the course of the illness, only appear again when the blood infection is altogether at an end.

TREATMENT. Maclachlan's² experience with the tincture of the chloride of iron in the constitutional treatment of this disease does not bear out the favorable experience of others. He uses with most advantage quinine, digitalis, and opium. He prescribes these drugs in the following pill, every two to four hours :

Opium	.	.	.	.	.	.	.	.	.	.	1 grain.
Quinine	.	.	.	.	.	.	.	.	.	.	1 grain.
Digitalis	.	.	.	.	.	.	.	.	.	.	$\frac{1}{4}$ grain.

Mix and make into one pill.

Antiseptics are advised locally.

Murrell and Bond³ administered in two grave cases of erysipelas anti-streptococcic serum, with excellent effect. The injections were made in the belly wall under or to the side of the navel.

Schweler⁴ recommends for external application a mixture of 1 part chloral and 3 parts camphor. This forms a transparent, rose-colored liquid, with the specific gravity of 0.999. It is applied to the surface every three hours. The author treated thirty-three cases, twenty-six being of the face. No gangrene, abscess, cellular degeneration, or renal complications were noted in any of the cases. High temperatures rapidly fell, and in some the course of the disease was soon terminated.

¹ Lancet, March 11, 1899; Monthly Cyclopædia of Practical Medicine, July, 1899.

² Loc. cit.

³ Lancet, June 24, 1899.

⁴ Medizinskoje Obosrenije, 1899, No. 4; Monthly Cyclopædia of Practical Medicine, December, 1899.

Furunculus. Reports continue to be made of the favorable influence of brewer's yeast. Aragon and Couturieux¹ add their testimony to its value, and also state that they have obtained from it two extractives which give equally good results, without the tendency to disturb the stomach, which ordinary brewer's yeast frequently exhibits.

Phillipson² has found that the best external agents for the treatment of boils are alcohol, benzoic acid, and salicylic acid. Especially to be commended is the salicylic acid plaster of 50 per cent. strength. The favorable action of these remedies is due, he believes, to their power of inhibiting the growth of the staphylococci.

Sycosis. Hodara³ vaunts the following prescription for the treatment of this troublesome disease, especially of the upper lip :

Sulphur	.	.	.	.	.	.	.	.	.	10 parts.
Zinc oxide	.	.	.	.	.	.	.	.	.	20 parts.
Sugar	.	.	.	.	.	.	.	.	.	20 parts.
Glycerin	.	.	.	.	.	.	.	.	.	10 parts.
Vaseline,										
Lanolin	.	.	.	.	.	.	.	.	ãã	20 parts.

This is applied thickly night and morning till the pustulation has ceased, and subsequently at night alone ; in the latter event simple oil being applied in the morning. The cases in which this treatment was employed, Hodara states, were of the chronic type and had resisted other plans. If there is nasal catarrh this should be properly treated at the same time. If this paste has a too drying or an irritating effect, occasional applications of olive oil will counteract such influences.

Crocker⁴ treated a severe chronic case of this disease involving the bearded region in an operative way. The man was first shaved, put under ether, and after epilation an affected area deeply scarified. It was then dressed with iodoform and subsequently with boric-acid ointment. The part so treated showed at the end of a few weeks great improvement, most of it having healed up quite soundly. Crocker believes that in severe cases several months of ordinary treatment would be saved by the adoption of such surgical measures. This is doubtless true ; but it is, nevertheless, a method which I am sure many would hesitate to adopt, and in the employment of which one would encounter opposition on the part of patients.

Herpes Zoster. An outbreak of zoster has occurred so often in connection with the administration of arsenic that such causative relationship between the drug and the eruption is now recognized by many observers.

¹ La Bulletin Médicale, July 5, 1899 ; Journal des Maladies Cutanées et Syphilitiques, December, 1899.

² Therapeutische Beilage der Deutschen medicinischen Wochenschrift, May 4, 1899.

³ Journal des Maladies Cutanées et Syphilitiques, July, 1899.

⁴ Society Transactions, British Journal of Dermatology, July, 1899.

O'Donovan¹ reports another such instance in a young girl, aged sixteen years, who had been taking arsenic for a few weeks, and who had been somewhat careless as to exact quantity, so that symptoms of puffiness of the face and eyelids presented. Several days later an extensive outbreak of zoster occurred, occupying the left arm and hand.

Netter² records a child with cerebro-spinal meningitis, complicated with trigeminal herpes zoster. The autopsy showed the corresponding Gasserian ganglion bathed in pus.

In somewhat exceptional instances the lesions of zoster are followed by scars. Audéoud³ presented before the Geneva Medical Society a female child, aged three and a half years, in whom keloids developed at the site of the lesions and an ulcero-gangrenous type of zoster about the intercostal region. The keloidal tendency was first noticed six weeks after recovery from the zoster.

TREATMENT. Bleuler⁴ not only claims that cocaine application is useful to relieve pain, but that it has a very material influence in causing the eruption to disappear in the space of some days. He has treated twenty-three cases in this way. His treatment consists in anointing the affected parts with a layer of pomade composed of :

Cocaine hydrochlorate.	. . . . .	1 part.
Lanolin,		
Vaseline	. . . . .	50 parts.

The region is then covered with a piece of linen smeared with this same pomade.

Delebecque⁵ recommends applications of an aqueous solution of picric acid (12 : 1000). Absorbent cotton compresses are soaked in this solution, wrung out moderately, applied to the affected areas, and covered with dry cotton and a bandage. To avoid maceration of the skin the dressings should be permeable. The applications should be renewed every three or four days and removed with care. Picric acid, the author believes, acts as an antiseptic and analgesic. It speedily relieves the neuralgic pains and allays the intense itching.

Dermatitis Herpetiformis. The presence of eosinophiles in the blood was thought at one time to be an essential factor in dermatitis herpetiformis. To-day that view is broadened, and the various bullous eruptions are thought to be due to the same condition. As yet, however, the question cannot be said to be definitely settled, as eosinophilia is sometimes absent.

¹ Journal of Cutaneous and Genito-Urinary Diseases, 1899, p. 134.

² La Presse Médicale, 1899, No. 38; British Journal of Dermatology, August, 1899.

³ Journal des Maladies Cutanées et Syphilitiques, November, 1899.

⁴ Neurologisches Centralblatt, November 15, 1899.

⁵ Revue de Therapeutique, No. 20, 1899; Philadelphia Medical Journal, Jan. 13, 1900.

Brown¹ reports a case in which there was coexisting eosinophilia; he made careful examinations of the blood at various times during the course of the disease, and these seemed to show that as the cutaneous condition improved the eosinophilia became less marked. On the other hand, Hallopeau² refers to a case in which the eosinophilia was entirely wanting.

Leredde,³ who has been the special advocate of the theory that this blood condition is a necessary factor in this disease, recently expressed himself as follows: "The two conditions—eosinophilia and excretion of the eosinophile cells by the skin—should coexist to be of positive import. Such coexistence in the several pemphigoid diseases is proof that these were forms of the same blood disease, the type of which is dermatitis herpetiformis. The skin manifestations of these several diseases are secondary, the result of blood disease due to the reaction of the hæmatopoietic organs, especially the bone-marrow, against some toxic agent, which might be of endogenous or heterogenous origin, of short or long duration."

Roussel⁴ reports a case of this disease in a young child, in which phimosis was the sole etiological factor, as was, in the writer's judgment, conclusively proven by the fact that a complete cure was accomplished by circumcision.

Abraham⁵ reported a case in a man in whom bad health and albumin in the urine seemed to be of etiological import. A second case by this same writer was in connection with pregnancy, appearing, however, after delivery.

An interesting fact noted by a physician,⁶ himself the subject of the disease, was the striking amelioration of the disease during attacks of malarial fever and other intercurrent disorders.

TREATMENT. Under any and all circumstances this is an obstinate and capricious disease. The physician who reported on his own case, above referred to, found distinct benefit from arsenic; this has also been my experience in the treatment of this disease. Hallopeau's case was much improved by fifteen to twenty injections of serum (*serum de lait*).

Pemphigus Vulgaris. Hadley and Bulloch⁷ report a case of acute pemphigus in a butcher, aged twenty-three years, which developed

¹ Journal of the American Medical Association, February 17, 1900.

² Journal des Maladies Cutanées et Syphilitiques, July, 1899.

³ Annales de Dermatologie et Syphiligraphie, 1899, No. 4.

⁴ Orleans Parish Society Transactions, Philadelphia Medical Journal, February 24, 1899.

⁵ British Journal of Dermatology, March, 1899.

⁶ Ibid., July, 1899.

⁷ Lancet, May 6, 1899.

three or four days after an injury to his finger, received in connection with his occupation. The lesions first presented on the chin, and then invaded all parts of the body, and also the tongue and throat. Fever, vomiting, and diarrhœa developed, and the patient soon succumbed. Eosinophile leucocytes and a diplococcus, corresponding to that already described by Demme, were found in the blebs. The author states that nine similar cases in butchers have been reported.

Hallopeau and Laffite,¹ led by the report of favorable action from serum (*serum de lait*) injections in this disease, tried it in a case, but the result was negative.

Reference may here be made to three cases of pemphigus in a family, termed by Pinatelle² "chronic family pemphigus." The family consisted of seven children, of whom three were the subjects of chronic pemphigoid eruption. The oldest was aged fifteen years, the disease beginning at the age of three years. The eruption seemed to be produced by any pressure or by slight traumatism to the skin. The nails were brittle and at times cast off. These cases seem to belong to the condition designated in literature "epidermolysis."

Pemphigus Foliaceous is usually considered a form of pemphigus in which exudation takes place so rapidly that distinct and well-formed blebs are rarely observed. This variety has been investigated during the past year by Leredde.³ He concludes that there is an eosinophilia of blood and lesions. The skin changes, he considers, are secondary to the blood changes; that the disease is, in fact, at first a blood disease; and that the primary affection is one of the bone-marrow brought about by some toxic agent.

Pemphigus Contagiosus. Under this heading and that of *pemphigus neonatorum* have appeared from time to time cases of bullous eruptions possessing apparently contagious character. Many of these are doubtless examples of a variant form of impetigo contagiosa, but some of the cases reported can scarcely be classed with this latter disease.

Köhler⁴ has reported a small epidemic of a pemphigus eruption of acute character, corresponding to what has been termed by others febris bullosa. There were constitutional symptoms. Seven cases were found in those living in adjoining houses. One case, a child six months old, succumbed, with signs of severe bronchitis. The disease usually lasts two to four weeks. Bernstein⁵ reports five cases, all occurring in one

¹ Journal des Maladies Cutanées et Syphilitiques, November, 1899.

² Society Transactions, Journal des Maladies Cutanées et Syphilitiques, April, 1899.

³ Annales de Dermatologie et Syphiligraphie, 1899, vol. x., No. 7.

⁴ Archiv für klinische Medizin, 1899, vol. lxii., Nos. 5 and 6; Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 26.

⁵ Monatshefte für praktische Dermatologie, 1899, vol. xxviii., No. 1.

family. Munro¹ also refers to such cases, and had one fatal case. Brosin² has observed two epidemics in the new-born in Dresden, where in a total of sixty-four confinements there were eighteen cases, with seven deaths. In his cases there was, as a rule, no fever. The cause seems to be, as is to be expected, microbic, but as yet there is not complete uniformity in the findings.

TREATMENT. Brosin³ advises, in order to avoid the extension and propagation of the disease, to isolate the lesions by appropriate dressings, to keep the infant from general bathing, and other antiseptic precautions. Munro⁴ says the treatment should be mainly local. He commends corrosive sublimate soap for washing the surrounding skin, applies compresses of ichthyol or corrosive sublimate, and also speaks well of an ointment containing white precipitate and naphthol, and antiseptic dusting powder. In severe cases tonics are necessary, such as arsenic, iron, and quinine.

Eczema. What is the cause of eczema? This is a question which has always been agitated, but which in recent years has excited much active discussion. Is the cause parasitic or diathetic? The efforts at bacteriological solution of various diseases during the past decade have, as is to be expected, not spared this particular disease. Unna and Leredde are the most active champions of its parasitic nature. Leredde⁵ has added other papers to that quoted last year. The following statements, he thinks, have been demonstrated and point certainly to a parasitic cause: 1. Eczema is auto-inoculable. 2. Eczema develops spontaneously at cutaneous fissures furnishing points of lodgement, but not necessarily macroscopically visible. 3. The multiplicity of causes, both external and internal, with the identity of the cutaneous effects, prove the parasitic nature. The writer supports these statements with what seems to him conclusive evidence, but the acceptance of these several premises are by no means as yet admissible. It must be conceded, however, that this view of the disease is growing and may possibly eventually be confirmed. If, or on the other hand, as often maintained, the disease is diathetic in origin, some proof of this, Sabouraud remarks, should be obtainable from examinations of the sweat and urine of such patients; but as yet nothing uniformly pathological has been demonstrated in these secretions.

Whatever be the true origin or cause of the eczematous eruption, it is pretty generally admitted that its ordinary features are often some-

¹ British Medical Journal, April 29, 1899.

² Zeitschrift für Geburtshilfe und Gynäkologie, 1899, vol. xl., No. 3; Journal des Maladies Cutanées et Syphilitiques, 1899, p. 703.

³ Loc. cit.

⁴ Loc. cit.

⁵ Annales de Dermatologie et Syphiligraphie, 1899, vol. x., Nos. 1 and 5.

what modified by accidental or secondary infection by pyogenic micro-organisms. Jadassohn¹ calls particular attention to this point, and, moreover, gives a careful *résumé* of the various external and internal etiological factors which influence the disease. The effect of secondary infection is apparently shown in the rare condition described by Huber:² In a young girl with an extensive eczema there developed on the buttocks areas of pustular folliculitis, on which arose papillary vegetations, which, although striking and alarming in appearance, disappeared entirely in the course of a few weeks under the use of antiseptic applications.

Hodara³ would distinguish between eczematous "dermatitis varicosa" and eczema of the lower leg. He claims that the histological and histopathological findings are different; the chief differences being that in the former there is intracellular œdema instead of intercellular, as in eczema of this part, and that, moreover, the status spongiosus, acanthosis, and intercellular vesicles found in eczema are wanting in dermatitis varicosa. Further, in the latter there are varicose veins associated with lymphatic œdema, with its resulting conditions and inflammatory tissue changes, which may finally lead to atrophy.

TREATMENT. Much has been contributed in the way of treatment of eczema during the past year, although it cannot be said that any important advances have been made. Some of the recent plans and remedies which seemed promising have had their merits emphasized. Leredde⁴ adds his support to that of Besnier to the value of silver nitrate solutions, giving two methods, according to the diseased conditions, for its employment. The one method, for the acute and markedly inflammatory types, consists in the following: As soon as the acute and œdematous symptoms have been controlled by the usual applications he places over the diseased surface a layer of rubber; twenty-four hours afterward the parts are painted with a solution of nitrate of silver (1:40), allowed to dry on, and the rubber reapplied. Twenty-four hours later the rubber is again removed and silver nitrate solution (1:30) again used. The treatment is thus continued, the solution, if necessary, being increased in strength up to 1:15. The author has never met with inflammatory reaction as the result of this treatment. The second method is employed more especially in those cases of eczema of the hands due to external causes, as trade eczemas. For three or four days a cataplasm of boiled water or 5 per cent. borax solutions are kept

¹ Correspondenzblatt für Schweiz. Aerzte, 1899, No. 5; Monatshefte für praktische Dermatologie, vol. xxix., No. 6; September 15, 1899, p. 274.

² Archiv für Dermatologie und Syphilis, 1899, vol. xlix., No. 1.

³ Ibid.

⁴ La Presse Médicale, March 1, 1899.

applied, changing frequently. At the end of this time the affected parts are painted with a saturated watery solution of silver nitrate, and then gone over with a stick of metallic zinc; a black precipitate results, which remains three to four days on the rapidly drying skin. Two such repetitions usually lead to a good result. During any interim tar or salicylic acid salves may be employed. Jadassohn¹ also indorses the applications of silver nitrate solution in the persistent moist types of the disease.

Favorable statements continue to be made of the use of "naftalan"² in this disease. Bloch,³ Fricke,⁴ Paschkis,⁵ Varga,⁶ Gernsheim,⁷ Friedeberg,⁸ and Gruenfeld⁹ report upon its use. It may be prescribed with an equal part of zinc oxide ointment, or may be a part of compound salves. It seems to have a favorable influence upon the itching. It appears to be of more distinct value in the mildly acute and subacute cases. Bloch states that the action of the remedy is a superficial one, and is not, therefore, useful in infiltrated eczemas. Fricke especially commends its application in paste form:

Zinc oxide,	
Starch powder	aa 2 drachms.
Naftalan	4 drachms.

Leistikow¹⁰ praises the use of ink applications, being led to this plan by Unna's favorable experience. The ink is made by mixing together a 3 to 10 per cent. tannin solution and a 2 to 5 per cent. iron sulphate solution, and should be freshly prepared for each application. The strength of solutions employed depends upon the character and rebelliousness of the disease. His experience is based upon the treatment of several cases of eczema of the hands of a subacute vesico-papular character, accompanied with some swelling and oozing; the parts were bathed with the application for fifteen minutes daily.

Bottstein¹¹ has found salves containing lenigallol (pyrogalloltriacetate) in 3 to 30 per cent. proportions as extremely useful in all forms of

¹ Loc. cit.

² Naftalan is a brownish-black material, of salve consistence, of a peculiar odor, and readily incorporated with the different fatty ointment bases.

³ Die Heilkunde; Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 2.

⁴ Zeitschrift für praktische Aerzte, 1899, No. 2.

⁵ Wien. Allgem. med. Centralz., September 23 and 27, 1899.

⁶ Pester Med. Chir. Presse, 1899, Nos. 30-32; Monatshefte für praktische Dermatologie, February 15, 1899, vol. xxx., No. 4.

⁷ Klin. therap. Wochenschrift, 1899, No. 39; Monatshefte für praktische Dermatologie, February 15, 1899, vol. xxx., No. 4.

⁸ Centralblatt für innere Medicin, 1899, No. 31.

⁹ Wien. medicinische Blätter, 1899, No. 21.

¹⁰ Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 11.

¹¹ Therapeutische Monatshefte, January, 1899.

chronic eczema, having an especially favorable influence in promoting the absorption of the infiltration. For hard, thickened patches Unna¹ advises the occasional or even frequent use of a "peeling-paste" (schälpaste), by which the thickened part may be more quickly thinned down; during the intervals the ordinary applications are continued. He gives two formulæ, one for a stronger paste for small areas, and a second, somewhat weaker, for large patches:

I.	
Zinc oxide	10 parts.
Terra silicea	2 parts.
Benzoated lard	28 parts.
Resorcin	40 parts.
Ichthyol,	
Vaseline	10 parts.
II.	
Zinc oxide	15 parts.
Terra silicea	3 parts.
Benzoated lard	42 parts.
Resorcin,	
Vaseline	20 parts.

Brocq² speaks well of the treatment of eczema of the hands and extremities, which essentially consists in keeping the parts constantly covered with some light material. The following is his plan: The parts are first cleansed with cold-cream or vaseline and then washed with boiling water. Immediately afterward pure vaseline with zinc oxide incorporated is freely applied; over this is placed several layers of aseptic tarlatan, the parts being carefully enveloped with this, and then over all a layer of absorbent wadding, and a gauze roller to keep it on. The dressing is to be changed as frequently as the condition requires. Active medicaments may be added to the vaseline if deemed desirable, such as resorcin or salicylic acid; on the hands he prefers the following:

Acid salicylic	1 part.
Zinc oxide	20 parts.
Lanolin	30 parts.
Vaseline	40 parts.

Vollmer³ mentions the good effect of the faradic current in some cases of eczema, especially those cases in which there seems to be an underlying paralysis of the cutaneous vessels. He refers to three cases which had been unsuccessfully treated with other methods, and which under the electrical treatment made a good recovery. The writer suggests that it is probably due to the catalytic influence of the current upon

¹ Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 3.

² Journal de Med. et de Chir. Pratiques, November 10, 1899; Journal des Maladies Cutanées et Syphilitiques, December, 1899.

³ Therapeutische Monatshefte, October, 1899.

the vasomotors and the vessels, which favorably influence resorption and nutrition of the parts. It is probable, too, that the arrectores pilorum and bloodvessel muscles are given tonicity, and in this way the skin strengthened and made resistant against serous exudation.

Eddowes¹ adds his indorsement to the gelatin-bandage method—a plan of treatment which I believe, from my own experience with its employment, should have more general use. Eczema of the leg, more particularly of the dry type, often shows surprising improvement in a short time. Eddowes gives the formula, which is the one commonly employed :

Zinc oxide	1 part.
Gelatin	2 parts.
Glycerin	3 parts.
Water	4 parts.

The gelatin is soaked for a few hours in water, and then all the ingredients are mixed with the aid of heat. My own plan is to melt the gelatin in a double boiler in the water, and then mixing in the zinc oxide and glycerin, which had been previously rubbed up together. The further plan adopted by Eddowes is to have the surface washed with water or alcohol, according to the case. The gelatin mixture is painted over the whole diseased surface and then covered with an ordinary bandage. At first the dressing is changed once or twice weekly. The formula used at the Jefferson Medical College Hospital Skin Dispensary is essentially the same as the above, with the addition of 2 per cent. of ichthyol and a slightly larger proportion of water ; and, further, a thin gauze bandage is put on before the gelatin coating is completely dry, and this dusted over with boric-acid powder. The gelatin mixture keeps well, and only needs remelting when another application is desired. The water gradually evaporates, so that it may be necessary to add from time to time a little more water.

Several writers—Hutchinson,² Jadassohn,³ and Schamberg⁴—in their writings during the past year, incidentally, but warmly, refer to the value of liquor carbonis detergens⁵ (a coal-tar preparation), to the value of

¹ Medical Times and Hospital Gazette, September, 1899; Philadelphia Medical Journal, February 24, 1900.

² Archives of Surgery, 1899, vol. i., p. 164; Journal of Cutaneous and Genito-Urinary Diseases, October, 1899.

³ Loc. cit.

⁴ International Medical Magazine, 1899, No. 8.

⁵ The original preparation is made by Wright, of London, but an equally efficient preparation can be made by any careful druggist. The following is a formula which often has been used by various dermatologists, including myself:

Coal tar	4 parts.
Soap-bark tincture	9 parts.

Mix and allow to digest for eight days, with occasional agitation, and filtering.

Soap-bark tincture is made by digesting for a week a quarter-pound of soap-bark in sufficient alcohol (95 per cent.) to make a quart.

which I can heartily subscribe. In irritable cases, as Hutchinson remarks, it should be at first used extremely weak, a teaspoonful or so to a pint of water. It may, however, be used much stronger, one or two teaspoonfuls in the teacupful of water, and in chronic, sluggish cases even pure; a good plan in some cases is to prescribe it in the form of ointment, 1 or 2 drachms to the ounce of simple cerate or similar base.

Holland¹ reports a good result from the use of the X-ray in a case of eczema of the dorsum of the hand in a young girl, aged nineteen years. The disease was of the chronic type, accompanied with a good deal of infiltration and crusting, and had lasted five months. The part was subjected to the X-ray, the lower edge of the tube being held at a distance of from four to seven inches. Seven exposures were made at intervals in the course of a month, each for a period of fifteen minutes. At the last exposure the scales had about disappeared and the crusts could be readily removed. Without any further treatment the case progressed toward recovery, and four weeks later complete cure had taken place.

In twenty-three cases of eczema in children Landau² has had good results from the use of tanniform. The accumulated crusts were first removed by the application of olive oil for twenty-four to forty-eight hours, and then an ointment composed of 1 part tanniform and 10 parts adeps lanæ applied, a fresh application being made once daily.

In eczema fissum of the nipples Olivier³ has recommended bathing with a solution of silver nitrate (1:150), and with boric-acid solutions, followed with dusting powder of aristol or salol. Le Maire⁴ speaks well in this condition of creolin in the form of a 1 per cent. solution applied lukewarm on compresses, and also of a saturated solution of orthoform in 80 per cent. alcohol, painted on and immediately around the nipples.

Quite often mild treatment is efficacious in eczema if the details are well carried out; old remedies well applied are much superior to many of the new drugs with their alleged marvellous properties. As Bulkley⁵ remarks, zinc ointment is a boon to eczema, because it affords a simple, non-irritant dressing in many cases; but, as he adds, it is relatively inert and ineffective when used alone, although with certain additions, such as ichthyol (2 to 10 per cent.) and salicylic acid (2 to 5 per cent.), it proves of the greatest service in such cases. I can cordially indorse the value of an old combination which he lauds, consisting of:

¹ British Medical Journal, April 29, 1899.

² La Progrès Médicale, 1899, No. 3.

³ Annales de la Polyclinique de Paris, July, 1899; Journal des Maladies Cutanées et Syphilitiques, September, 1899.

⁴ Centralblatt für Gynäkologie, August 12, 1899.

⁵ New England Medical Monthly, May, 1899; Monthly Cyclopædia of Practical Medicine.

Tar ointment	1 to 2 drachms.
Zinc oxide	1 drachm.
Cold cream to make up	1 ounce.

This often affords the very best dressing possible, and if correctly and faithfully applied remains still one of the best applications for eczema. The ointment should be thickly spread upon lint and cut to fit the diseased surface, and then bound on with a gauze bandage. On the face it is not often desirable to thus bind it on; but it should be reapplied as often as it is at all disturbed, even many times daily. He finds the best device for restraining an infant from scratching and tearing itself consists in the use of a small pillow-case with an opening at the closed end sufficient to admit the head being passed through it; this is drawn down upon the baby and firmly secured by means of a safety-pin between the legs; a few more safety-pins suffice to secure the arms in place at the sides, thus making it impossible for the child to reach its face or even the other hand.

In *eczema seborrhœicum* Audry¹ commends for localized areas an ointment consisting of:

Precipitated sulphur	4 parts.
Lanolin,	
Vaseline	ââ 15 parts.

For extended surfaces an ointment of:

Precipitated sulphur	15 to 20 parts.
Wax,	
Anhydrous lanolin	ââ 40 parts.
Olive oil	80 parts.

This may be prescribed with or without three parts of salicylic acid, according to the degree of inflammation. In seborrhœic eczema of the scalp he advises the scalp to be washed with corrosive sublimate solution (1:1000), and then the patches anointed with the above sulphur pomade, and to the rest of the scalp the following:

Precipitated sulphur	8 parts.
Balsam of Peru	2 parts.
Oil of sweet almonds	100 parts.

Sulphur is, as I can confirm, certainly of a good deal of value in these cases, but in many instances, in my experience, it must be used extremely weak, somewhat weaker than in the above formulæ.

Resorcin is another remedy which has been proven useful in the seborrhœic type of eczema; but, like sulphur, must be used with care, at first at least. The method suggested by Frickenhaus² as in his ex-

¹ Annales de Dermatologie et Syphiligraphie, 1899, Nos. 2 and 3.

² Monatshefte für praktische Dermatologie, June 1, 1899.

perience valuable, must, therefore, be cautiously prescribed. He advises the application of a 25 per cent. solution of this drug to the small patches, to be followed in a few days with a 10 per cent. solution; in addition to this the parts are to be anointed at night with some mild ointment, such as cold-cream. In cases of seborrhœic eczema of the nose he has used much stronger solutions (50 per cent.). I should hesitate to employ these strong applications in the average case unless first tried on a small area, as I feel convinced, judging from my own observations, the disease would in some cases be aggravated.

In the form of seborrhœic eczema resembling psoriasis Hodara¹ lauds an ointment containing sugar, this ingredient having keratoplastic properties; his formula is as follows:

Vaseline,	
Lanolin	aa 30 parts.
Glycerin	10 parts.
Sugar	20 parts.
Sulphur	10 parts.
Chrysarobin	1 to 2 parts.

After applying this ointment the areas are to be covered with a light covering of cotton and a muslin bandage.

Lichen Planus. Lichen planus has usually well-defined features, which, if once seen, are usually easily remembered. Even in the extensive cases, such as described by Mackenzie,² its characters remain well defined, as his brief account depicts: "The eruption, for the most part discrete, is in places confluent; but even there the individual elements can be recognized, consisting of smooth, flat-topped papules, for the most part of angular shape, some of them presenting a depression in the centre. The individual papules are of reddish color, but where aggregated a bluish tint is observable. The amount of scaling is slight. There is a considerable degree of burning and itching." In this case there were, however, two points of special and unusual interest; there was some eruption in the mouth and on the sole of the foot; in the latter region, where the eruption was also abundant, one or two bullæ had formed under the thickened epidermis. Hallopeau and Le Sourd³ also refer to a case of an extensive acute lichen planus, in which the eruption in the palms consisted of deep-seated vesicles.

The eruption in the mouth is extremely rare, as is likewise the palmar and plantar vesiculation. Petersen⁴ records a case in which the disease first made its appearance on the mucous membrane of the mouth

¹ Journal des Maladies Cutanées et Syphilitiques, July, 1899.

² British Journal of Dermatology, January, 1899.

³ Journal des Maladies Cutanées et Syphilitiques, November, 1899.

⁴ Society Transactions, St. Petersburger medicinische Wochenschrift, 1899, No. 4; Monatshefte für praktische Dermatologie, vol. xxviii., No. 9.

and throat, and later upon the general integument. The mouth eruption, as Petersen remarks, bears a striking resemblance to syphilitic lesions.

The occasional appearance of the lichen planus eruption, band-like and circinate in character, is occasionally observed, as in the case reported by Hallopeau and Gardner;¹ but almost invariably, as in this case, the scattered lesions are typical.

A few instances of atrophic changes have been observed in the patches of this disease. Orbaek² reports such an instance. There were plaques about the trochanter region, somewhat depressed and punctiform and striated, presenting roughly a mosaic appearance, with a clear, cicatricial aspect. There was in this instance, too, an association of vitiligo areas. The literature of several similar atrophic types of lichen are referred to by the author.

Usually this disease is met with in adults, but in recent years cases in young children have been reported. Eddowes³ exhibited such a case in a child, aged four and a half years.

TREATMENT. Arsenic has long been considered of almost specific value in this disease, and is still, I believe, entitled to the first place in its treatment. In the case referred to by Petersen, involving the mouth and throat, the arsenical treatment brought about marked improvement. In the atrophic case described by Orbaek the treatment consisted of the administration of arsenic and externally a 5 per cent. ointment of pyrogallol salve, with, after a few months, distinct betterment.

Lichen Annularis. Under this title Galloway⁴ describes a peculiar "ringed eruption" occurring on the back of the hands. It was of three years' duration. The lesion consisted of a smooth, pale, ivory-like, elevated border, showing circular or circinate outlines, in the neighborhood of the joints; the enclosed skin of the area looked normal, although it had been affected in a similar manner to the part forming the raised border. Its resemblance to both annular lichen planus and lupus erythematosus was commented upon. Other similar or closely similar cases in the literature are referred to.

Histological examination showed the process to consist chiefly of the infiltration of new cells of the types seen in certain chronic inflammatory processes into the cutis, especially the upper part.

TREATMENT. Salicylic acid locally as a 2 to 10 per cent. ointment, and the administration of iron and cod-liver oil brought about, up to the time of writing, almost complete disappearance of the eruption.

¹ *Annales de Dermatologie et Syphiligraphie*, June, 1899.

² *Journal des Maladies Cutanées et Syphilitiques*, December, 1899.

³ *Society Transactions, British Journal of Dermatology*, May, 1899.

⁴ *British Journal of Dermatology*, June, 1899.

Psoriasis. Psoriasis has occasionally its beginning in a vaccination mark, as in a case described by Bettmann,¹ which seems suggestive of infection. The patient was a boy, aged twelve years, who a few weeks after the vaccine pustules had healed developed an extensive psoriasis starting from the region of the vaccination marks. There was no family history of the disease. There is, however, a distinct disposition for the eruption to appear in scars. Hallopeau and Gardner² record a case in which, in a relapse, spots of the disease appeared in cicatrices, due to application of cautery points.

Psoriasis in infants is rare. Rille records the case of a baby in whom the disease appeared on the sixth day of life. He mentioned as an interesting fact that the father had been subject to the disease for years and had an extensive eruption at the time of procreation of the child. Of the remaining three children in the family no other was affected. The literature is quite extensively gone over.

A case of peculiarly rare psoriasis is described by Gassmann,³ in which there were many gyrate patches, of which the constituting lesions were extremely small and numerous and the scaliness exceedingly slight.

Several papers on the histology of the disease have been contributed by Bosellini,⁴ Kopytowski,⁵ and Nardecchia,⁶ but give practically no new light. Bosellini's conclusion is that the first changes occur about the vessels, and are more of vasomotor than of inflammatory character. On the contrary, Kopytowski states the process is a distinctly inflammatory one. Nardecchia's work was in psoriasis in alcoholics as compared to psoriasis in those not addicted to stimulants. He found that the bloodvessel changes which are observed in alcoholics were made much more pronounced by the psoriatic process.

The essential cause of psoriasis remains yet to be discovered. Syphilis in the progenitor has been from time to time alleged to be an etiological factor, and this idea Alpár⁷ hints at again having met with three cases of the disease, in which the antecedents of the patients had syphilis. It is needless to say that such a supposition is lacking even possibility. It would be surprising, indeed, in this age, when syphilis is not uncommon and psoriasis rather frequent, if such coincidental association were not occasionally observed.

¹ Münchener medicinische Wochenschrift, 1899, No. 15.

² Journal des Maladies Cutanées et Syphilitiques, November, 1899.

³ Ibid., July, 1899.

⁴ Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 7.

⁵ Annales de Dermatologie et Syphiligraphie, 1899, Nos. 8 and 9.

⁶ Riforma Medica, 1899, Nos. 14-17; Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 12.

⁷ Society Transactions, Monatshefte für praktische Dermatologie, vol. xxix., No. 3.

The contagious theory is interesting, and Coffin¹ believes that there is much in the clinical behavior of the lesions, their manner of spread and their recurrence which lend force to this view. He admits that even if such a theory be accepted, that the contagiousness is extremely feeble.

TREATMENT. Gijselman² adds his indorsement to the value of sodium cacodylate injections, but he is not able to say that it is superior to the other arsenical preparations. This writer has so far never noted keratosis of the palms and soles to follow its administration. Such a result is occasionally observed in long-continued arsenical administration, and the possible epitheliomatous change in the corneous formations, as in the fatal case reported by Hartzell,³ must be kept in view.

Potassium iodide in large dosage, as Haslund originally advised, is occasionally of value. Rille⁴ calls attention to the rapid effect of this drug in a case under his care. In this case symptoms of severe iodide poisoning intervened, and the drug had to be temporarily discontinued. In forty days, with ten days' pause, the patient had taken twenty-five ounces.

The external treatment is always of value in this disease, and almost always demanded for its removal. Lau⁵ reports on the good effects of alcohol dressings in his own case. Concentrated alcohol, he thinks, acts by absorbing water from the tissues, in that way modifying the dermic papillæ, which in psoriasis are infiltrated, œdematous, and congested. He applies every evening compresses of absorbent cotton, wet with concentrated alcohol (70° to 92°), with 2 per cent. of salicylic acid, which he covers with some impermeable material, and leaves the dressing on overnight. In the morning it is removed and the patches washed with water, soap, and a sterilized brush in such a manner as to remove all the scales. After the end of a variable time the skin commences to crack, when inunctions are made with lanolin, and subsequently the treatment is resumed. The result, the writer says, has been fully as favorable as obtained by other less pleasant plans, while the alcoholic dressing has the great advantage of not being dirty and of being more convenient. It is probable, I think, that the salicylic acid is entitled to some of the credit in this method.

Bottstein⁶ speaks well of lenigallol (pyrogalloltriacetate) and eurobin

¹ *Journal des Maladies Cutanées et Syphilitiques*, February, 1899.

² *Wiener klinische Wochenschrift*, 1899, No. 14.

³ *American Journal of the Medical Sciences*, September, 1899.

⁴ *Society Transactions, Monatshefte praktische Dermatologie*, 1899, vol. xxx., No. 1.

⁵ *La Semaine Médicale*, September 13, 1899; *Journal des Maladies Cutanées et Syphilitiques*, October, 1899.

⁶ *Therapeutische Monatshefte*, January, 1899.

into a vesicle, which slowly dries to a crust. The vesicular formation is completed in several days, but it may be several weeks or longer before the crust falls off. The crusted lesion seems to be embedded in the skin. In consequence of the scratching the lesions often assume a pustular appearance. It is followed by scars. Perry¹ exhibited a similar case, under the name of necrosing folliculitis, before the London Dermatological Society.

The causes of acne are often difficult to surmise. In some cases, but more especially acne rosacea, the possibility of the eruption being due to intranasal pressure should be considered. Murray² calls attention to this factor, as others, notably Seiler, have done before him.

In the several cases above referred to not much light is thrown upon the etiology of these peculiar acne-like eruptions; some of these cases may belong to the tuberculides. Microscopical examination of the lesions in Löwenbach's case of acne urticata practically disclosed merely evidences of inflammatory action—an inflammatory oedema, resulting in the exudation of free fluid in the papillary body and the subsequent formation of a subepidermoidal vesicle. The central resulting necrosis was found pierced by a sebaceous-gland duct. The usual micro-organisms found in similar skin lesions were found, but apparently had no pathogenic import. The investigations by Sabouraud and Amabilis indicate that necrotic acne is a perifolliculitis, especially of the outermost part, extension taking place superficially and more deeply, with a resulting necrosis of the invaded tissues and the consequent scar. The disease must have, these observers state, for its origin a microbacillar seborrhœa; to this is added the presence of the staphylococcus aureus. As a consequence, there occurs a diffuse collection of leucocytes in the cutis beneath the epidermis, the part thus attacked necrosing and drying to a crust, and this falling off and leaving behind the depressed cicatrix.

Gilchrist³ has, like Unna, been able to demonstrate the presence of a special bacillus in sections made from acne pustules. His investigations went much further than this last observer, however, by also adding culture and inoculation experiments, which were also confirmative. Gilchrist says: "It has always been, and is in fact at present, taught that acne pustules are due to the presence and growth of ordinary pus organisms. I have demonstrated that just the contrary is the case, and that the acne bacillus is the sole cause; and if the staphylococcus pyogenes albus is present it is to be regarded as a secondary invasion." In making this statement, however, Gilchrist does not wish to be under-

¹ British Journal of Dermatology, March, 1899.

² New York Medical Record, March 25, 1899.

³ Transactions of the American Dermatological Society for 1899.

stood as belittling the importance of the predisposing causes ; the "soil" is to be considered a very important factor when considering the etiology.

In some cases of acne the possible medicinal origin should be thought of. Herxheimer¹ makes a contribution to such cases. The patient, a male adult, worked in a room containing from time to time chlorine gas, and as a result became the subject of acne lesions of the papular, pustular, and a cutaneous-abscess type, involving various parts ; several other workmen were similarly affected.

TREATMENT. As regards the several cases of rare acne-like disease here described, very little can be added as to treatment except that the cases were persistently rebellious, which accords with my own experience. Popper reports decided improvement in his case from tincture of green soap shampoos and applications of white precipitate ointment. As to acne necrotica Sabouraud and Amabilis lay stress on the fact that it is not so much the acne eruption that is to be treated, but the fundamental underlying disease—the seborrhœa. Stimulating and irritating salves are recommended for this, especially one consisting of :

Resorcin,	
Salicylic acid	āā 1 part.
Vaseline	6 parts.

With this treatment good results are said to have been secured.

Müller² states that in acne vulgaris he has had the best results from the use of medicated soaps. Ordinarily he adopts one of two methods : simply washing the face with soap and afterward rinsing off, and the other method permitting the lather to dry on. In those cases of acne in which there is a preponderance of comedones he prefers the sulphur-camphor-Peruvian-balsam soap ; if there is coexisting seborrhœa, a soap containing salicylic acid, sulphur, and resorcin. These various medicated soaps are found in the market. My own experience with them has not been so favorable as that of Müller seems to be. The author employs other means, but the use of the soap he considers the essential part of the treatment.

A plan of treating obstinate types of acne, well known to dermatologists, is to bring about active inflammation and exfoliation. Hackett³ refers to a good formula for this purpose :

Precipitated sulphur	90 grains.
Resorcin	60 grains.
Salicylic acid	30 grains.
Vaseline	1 ounce.

¹ Münchener medicinische Wochenschrift, February 28, 1899.

² Dermatologische Zeitschrift, 1899, vol. vi., No. 5.

³ Physician and Surgeon, September, 1899 ; Monthly Cyclopædia of Practical Medicine, January, 1900.

This is to be applied at night, after the face has been thoroughly washed with tincture of green soap and hot water. The strength of this ointment is to be varied according to the irritability of the skin and according to the effect produced. It would be advisable to begin with a weaker ointment on those of sensitive skin. In the morning mild ointments are applied.

Ichthyol internally is a remedy which keeps jutting forward every year for the treatment of this disease. It has been a disappointing remedy in my hands except when used as an external application. Jessner,¹ however, commends it highly when given in ten to fifteen drop doses, three times daily, largely diluted; or it may be given in capsules. While some unpleasant gastric symptoms, such as belching, are produced at first, these soon pass away, and the remedy is tolerated, and has merely a regulating influence upon bowel movement. He also speaks well of ichthalbin, an almost tasteless and odorless preparation of ichthyol, in daily quantity of one drachm.

In sluggish, chronic cases of acne Levisseur² advises the administration of potassium iodide in small or moderate dosage until slight iodism is produced or traces of iodine are found in the urine, when the drug is to be discontinued and local measures used.

HEMORRHAGES.

Purpura. The belief seems to be growing that many cases of purpura are the result of infection. Breton,³ who goes into a consideration of this question, states that according to his own observations it is in many cases due to an auto-intoxication starting from the intestinal tract; gastro-intestinal disturbances, obstinate constipation, etc., being predisposing factors. Johnson⁴ believes, from a study of cases, that the several classes of causative factors are, in general, vasomotor, toxic, and infectious. Possible infection is suggested by the case reported by Pagliani and Francois,⁵ in which purpura of a severe type developed in the course of an ulcero-membranous stomatitis. Apparently a somewhat similar case is that referred to by Kernig,⁶ in which, along with a pronounced purpura, there was a peculiar ulceration in the mouth.

¹ Dermat. Vorträge für Prakt., 1899, No. 11; Monthly Cyclopædia of Practical Medicine, January, 1900.

² New York Medical Record, November 11, 1899.

³ Journal des Praticiens, 1899, No. 3.

⁴ New York Medical Journal, October 7, 1899.

⁵ Presse Médicale, April 26, 1899.

⁶ St. Petersburger medicinische Wochenschrift, 1899, No. 17; Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 2.

Grave systemic disease is often the basis of a purpuric outbreak. Colcott Fox,¹ in a communication before the London Clinical Society, related that, in a case of Bright's disease, toward the end he observed the development of a marked hemorrhagic erythema. Goldenberg² refers to a case in which there was, as a complication, an acute nephritis. Poynton³ reports a case of pernicious acute rheumatism accompanied with an extensive hemorrhagic eruption; on some of the hemorrhagic areas numerous blebs with bloody contents developed. An interesting case of infectious erythema and purpura hemorrhagica secondary to a membranous enteritis at the decline of typhoid fever is reported by Londe.⁴

Purpura is sometimes observed to follow the grip, as in the case reported by Glendenning⁵ and the fatal case recorded by Frankenhäuser.⁶

In two fatal cases of hemorrhagic septicæmia Howard⁷ found the bacillus mucosa capsulatus of Fränkel, corresponding to the Friedländer bacillus. In the bacteriological investigation of the blood of a case of infectious purpura Bellei and Boschi⁸ found a micro-organism showing great resemblance both to that of the staphylococcus cereus albus of Passet and that of the micrococcus candicans of Fleugge.

TREATMENT. In a severe case of fulminating purpura reported by Bouloche⁹ the essential treatment consisted of injection of 120 c.c. of artificial serum; rapid recovery ensued.

HYPERTROPHIES.

Molluscum Contagiosum. Hallopeau¹⁰ makes mention of a case of molluscum contagiosum in a woman, in whom the lesions were numerous and upon various parts—in some places so crowded together as to resemble bunches of grapes, the individual growths being still distinct; other groups resembled frambœsiform nævi. The case reported by Abraham¹¹ is unusual likewise in the large number and wide distribu-

¹ Lancet, June 3, 1899.

² Deutsche medicinische Wochenschrift, 1899, No. 26.

³ Lancet, October 28, 1899.

⁴ Journal des Maladies Cutanées et Syphilitiques, 1899, p. 770.

⁵ St. Petersburger medicinische Wochenschrift, 1899, No. 4; Monatshefte für praktische Dermatologie, 1899, vol. xxviii., No. 9.

⁶ Philadelphia Medical Journal, May 6, 1899.

⁷ Journal of Experimental Medicine, 1899, vol. iv., No. 2.

⁸ Riforma Medica, 1899, vol. ii., No. 7; Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 10.

⁹ Bulletins et Mémoires de la Société Médicale des Hôpitaux de Paris, November 2, 1899; Journal des Maladies Cutanées et Syphilitiques, January, 1900.

¹⁰ Journal des Maladies Cutanées et Syphilitiques, July, 1899.

¹¹ Society Transactions, British Journal of Dermatology, December, 1899.

tion of the growths, and also from the fact that the mouth was also the seat of lesions, in the latter region resembling large patches of leukoplakia, but which on closer inspection were found to be composed of numerous papules merging together.

TREATMENT. Hallopeau usually treats the molluscum growths by evacuating the contents and introducing into the cavity a pointed stick impregnated with tincture of iodine. In a case similar to that reported by him, he states, Kaposi employed with success washing with *sapo viridis* and successive applications of salicylated soap plaster and sulphur ointment.

Verruca. Are warts contagious? The microbe has not been found, but the belief is much more common than formerly, and the clinical evidence is not antagonistic. Thus, Vivès¹ saw three members in the same family affected, one following the other in a period of a few years, the warts persisting in each. The close proximity of several such formations in an individual case is suggestive of auto-inoculability. Morrow² mentions a case in which the wart formation gradually extended around the unguial border of the nails. In the discussion Allen,³ Bronson,⁴ and others referred to similar cases.

TREATMENT. Fitz⁵ has been using applications of chrysarobin, especially on warts on the plantar aspect of the foot, for which salicylic acid had been employed ineffectually. The wart is to be pared or sand-papered down daily and the application made. The chrysarobin may be used either in a gutta-percha solution or in ether, 10 per cent. strength. In rebellious cases it is to be applied twice daily.

Mense⁶ uses trioxymethylene (paraform) dissolved in collodion, 3 parts of the former to 27 of the latter. This is applied three times daily; the warts after some days' use fall off.

Purdon⁷ recommends wearing continuously a rubber finger-stall if the warts are on the digits, or a rubber bandage if the growths are on the hands or feet. It should be worn sufficiently tight to exercise gentle pressure; this keeps the wart moist and macerated from retained perspiration. He was first led to try this for the removal of warts on his own finger which, with six weeks of such treatment, disappeared. Since then he has employed it with others and found it uniformly successful.

¹ *Journal des Maladies Cutanées et Syphilitiques*, August, 1899.

² *Society Transactions, Journal of Cutaneous and Genito-Urinary Diseases*, 1899, p. 183.

³ *Ibid.*

⁴ *Ibid.*

⁵ *Boston Medical and Surgical Journal*, June 29, 1899.

⁶ *Gazette des Hôpitaux*, January 13, 1900; *Journal des Maladies Cutanées et Syphilitiques*, January, 1900.

⁷ *Dublin Journal of Medical Sciences*, August, 1899; *Edinburgh Medical Journal*, January, 1900.

It would be difficult, I think, to get an average patient to follow up this plan for the necessary length of time.

Hypertrichosis. Freund¹ has been employing the X-ray in the removal of superfluous hair in women. He states that after seventeen to twenty-four exposures the hairs dropped out, and this result was obtained without serious accidents. After two months, however, there was a return. He suggests that three or four exposures every six weeks would keep the hair growth under control. Wood² also reports the employment of this method of removing hair, and he states that the parts to which thirty to forty exposures had been made seemed to be apparently permanently freed from hair growth.

There is evidently a question as to permanency in these cases. Moreover, there is a certain danger of troublesome dermatitis, which, considering the character of the ailment for which the treatment is employed, should make one hesitate before adopting it. The present methods of removing superfluous hair by electrolysis, depilation, and depilatories usually suffice and are unattended by risks.

Bulkley³ makes use of the bleaching properties of hydrogen peroxide in rendering less conspicuous the growth of hair on women's faces. He says its free and repeated use will produce a very material improvement in the appearance in a very short time. By blanching the hair an incipient mustache which was very striking will hardly be noticeable at a short distance. Another advantage, Bulkley states, is a certain retarding influence which it exerts on the growth of hair. This result is slow, but with a faithful continuance of the remedy the fine growth of hairs certainly diminishes; some of the stronger ones seem to grow, and these can be removed by electrolysis. In applying the peroxide to such cases, this writer adds, it is often well to begin by diluting it one-half with water and increasing the strength gradually. It must be thoroughly applied in order to be effective, and the patient should dip a piece of absorbent cotton in the peroxide until soaked and apply this to the skin, leaving it on there till it falls off, which may take several minutes.

I have occasionally advised this application in similar cases, and while it materially lessens the conspicuousness of the blemish, I have seen no evidence of any retarding influence on the hair growth.

Scleroderma. Cases of scleroderma continue to be reported, but it must be confessed but little new light is thrown on the nature of the disease. The neurotic origin can scarcely be doubted, and many points are met with from time to time in the cases reported which lend weight

¹ Wiener klinische Wochenschrift, September 23, 1899.

² Lancet, January 27, 1900.

³ Journal of American Medical Association, December, 1899; Monthly Cyclopædia of Practical Medicine, January, 1900.

to this view. Thus, Bruns¹ reports a case involving both lower extremities and stopping short on a line with the second sacral vertebra; there were some trophic changes of the right foot; several nails were gone, rhagades presented, and a small ulcer appeared, and there was in addition suppression of the sweat secretion. In one of James'² cases the disease had its beginning in an accident in which injury to a forefinger and a knock upon the head occurred; the sclerodermic changes began on the injured finger. Later the other fingers were involved, the end of the nose and the ears, and subsequently other parts. In James' second case, a woman, aged twenty years, the disease had existed for fifteen years, during which time there had been two attacks of rheumatism of the joints. In the case reported by Uhlenhuth,³ in a male, aged forty years, and of extensive character, the patient suffered with a Dupuytren contraction, and there developed a certain amount of numbness of the fingers. In Elliot's⁴ case, of long duration, the disease had appeared on the tips of the fingers, and in addition to the involvement of other parts there had developed a marked sclerodactylie.

The sometimes accompanying atrophic condition of the muscles and even the bone, as in Bloch's⁵ case, is also interesting in this connection. Somewhat similar, too, is the case mentioned by Adler,⁶ involving the lower extremities. The case of sclerodactylie reported by Kalischer,⁷ in which both fingers and toes shared in the process, although in the latter to a minor degree, also point toward nerve influence.

The plaque or morphea type does not seem to bear so strongly upon a purely neurotic cause, although even these cases are best explained upon such a basis. Two somewhat extensive cases of this type are recorded by Gayet⁸ and by Haushalter.⁹ In the discussion on the latter case Etienne mentioned an instance in which a patch of scleroderma developed upon the foot, following an old sciatica.

As bearing still further upon the neurotic origin of the disease, it is not infrequently noted that the skin is the seat of other cutaneous lesions of accepted nervous origin, in addition to the scleroderma. Thus, Eddowes¹⁰ exhibited a case before the Dermatological Society of Great Britain and Ireland presenting alopecia, leucoderma, and scleroderma. The alopecia was general, and had followed an attack of scarlet

¹ Deutsche medicinische Wochenschrift, 1899, No. 30.

² Scottish Medical and Surgical Journal, May, 1899.

³ Berlin. klinische Wochenschrift, 1899, No. 10.

⁴ Journal of Cutaneous and Genito-Urinary Diseases, 1899, p. 575.

⁵ Berlin. klinische Wochenschrift, 1899, No. 14.

⁷ Wiener klinische Rundschau, 1899, No. 5.

⁸ Journal des Maladies Cutanées et Syphilitiques, January, 1900.

⁹ Ibid., May, 1899.

¹⁰ British Journal of Dermatology, August, 1899.

⁶ Ibid.

fever at eight years of age. Nothing fresh was observed until the patient was about fourteen, when he noticed that his skin was becoming brown, and soon afterward noticed the large patches of leucoderma. In course of time, patches of morphea showed themselves in the centre of the leucodermic areas. Later distinct atrophic changes in all the cutaneous tissues took place.

In some cases there is distinct loss of sensibility of the skin. Thus in the very extensive case reported by Tchernoff¹ the cutaneous sensibility was greatly diminished, and in addition the sense of taste was lost and the hearing disturbed.

As bearing upon the neurotic belief of the nature of this disease the report of an autopsy of a case dying after operation for an abdominal tumor may be referred to. In this case, reported by Stevens,² there was pronounced hemiatrophy of the face, body, and extremities. The autopsy showed that the cortical matter of the hemisphere opposite to the atrophic side was perhaps a little thinner, but no microscopical examination is recorded. In the spinal cord, however, the gray matter of the right (the affected side) anterior horn was diminished, the ganglion cells were smaller and less numerous, and their nuclei and plasma granules were not so well defined as the corresponding cells of the opposite side. The neuroglia also in the right horn seemed denser than in the left. Corresponding changes could not be made out in the medulla or pons. Throughout the cord, medulla, and pons the arteries, especially of the gray matter, were surrounded by spaces, either empty or containing a structureless, homogeneous material, and most of these spaces had well-defined margins. The nerve-fibres from the cervical and lumbar plexuses showed a well-marked parenchymatous degeneration. Stevens regards the atrophy of the anterior horn, the changes in the cells there, and the cavities formed around the vessels as of much importance, and looks upon the scleroderma as the result of these changes—*i. e.*, as a trophoneurosis of central origin. The neuritis he regards as secondary and recent.

Changes in the thyroid gland have not infrequently been noted in scleroderma, usually late in the course. In Uhlenhuth's case, however, there was total atrophy of this gland, and this atrophy seemed to have preceded the skin changes. Atrophy of the thyroid gland was also noted in the case reported by James.³

In James' case an examination for organisms was made with blood obtained from a puncture in the finger end. A pure culture of cocci was obtained, occurring singly, in pairs, and in clumps; these organisms

¹ Wratch, 1899, No. 4.

² Lancet, January 7, 1899; Medical and Surgical Review of Reviews, 1899 vol. ii., No. 4.

³ Loc. cit.

were also found in the blood from a skin puncture from a case of Raynaud's disease in the same hospital. The author did not regard the organisms as etiological factors.

TREATMENT. Hebra¹ has treated three cases with injections of thio-sinamin. Improvement was noted in all the cases. Each injection consisted of half a Pravaz syringeful of a 15 per cent. alcoholic solution. It was injected deeply between the shoulders every second day.

Thyroid was administered in the case recorded by Gayet, and under this treatment improvement was noted, although it had not been very marked when the case was reported. Dr. Eddowes' case improved considerably with this plan of treatment. This remedy, however, proved entirely unavailing in Uhlenhuth's case; ichthyol lotions and ointments afforded some benefit.

ATROPHIES.

Alopecia. The effort still continues to solve the problem of *alopecia prematura* beyond the acceptance of pure heredity. Saalfeld² has endeavored to prove its contagiousness, as did Lassar. For this purpose he made use of rabbits, white mice, and guinea-pigs, but the experiments were entirely unsuccessful, and were against, he states, the acceptance of a parasitic theory for ordinary baldness. Jessner,³ Brocq⁴ and others are unquestionably right in the assumption that the cause of alopecia in many cases is a chronic seborrhœa—eczema seborrhœicum. This variety is pretty generally admitted at the present day to be of probable parasitic origin, and in a sense contagious. An underlying constitutional condition is, as Brocq⁵ remarks, often an important element.

Whatever be the cause of alopecia, experience teaches that in those cases in which a hereditary tendency is marked, and particularly those in which there is no seborrhœic element, an opinion as to a regrowth cannot be too guardedly expressed. In discussing the treatment Brocq⁶ states that there should be a difference in the strength of remedies in cases of alopecia without seborrhœa and in those cases in which this latter disease is a factor; the former permitting of actively stimulating remedies; if such were employed in the eczema seborrhœicum cases the

¹ Archiv für Dermatologie und Syphilis, 1899, vol. xlviii., No. 1.

² Virchow's Archiv, vol. clvii., No. 1; Monatshefte für praktische Dermatologie, 1900, vol. xxx., No. 1.

³ Die ärztliche Praxis, 1899, Nos. 1-6; Monatshefte für praktische Dermatologie, 1900, vol. xxx., No. 1.

⁴ Journ. et Med. et de Chir Prat., June 10, 1899; Journal des Maladies Cutanées et Syphilitiques, June, 1899.

⁵ Bull. Med., March 16, 1899; Journal des Maladies Cutanées et Syphilitiques, April, 1899.

⁶ Loc. cit.

seborrhœic condition is likely to be aggravated. In the seborrhœic type the treatment must be directed to a removal of the seborrhœa; later stronger remedies may be employed. Brocq speaks well of an ointment of yellow oxide of mercury, 1 part, and vaseline, 20 parts, followed the following day with dilute coal-tar lotion. Shampooing is to be practised from time to time, according to circumstances. In the non-seborrhœic cases, and in seborrhœic cases as soon as this condition is removed, a stronger application is commended, such as one consisting of

Glacial acetic acid,	
Formol	4 to 10 parts.
Pilocarpine hydrochlorate	1 to 2 parts.
Alcohol (90°)	400 parts.

The general health should be investigated. Brocq remarks that it is a good plan to examine the finger nails; if there is transverse striation there is some fault in the general health, which should be sought out and corrected. Jessner¹ goes over the usual remedies, emphasizing the value of sulphur, salicylic acid, and tannin, employed in salves, in the seborrhœic type. Frequent shampooing is valuable, and when the seborrhœa is apparently cured he recommends, once or twice weekly, a shampoo with sulphur soap and hot water. The secret of success in many cases is, as Jessner correctly states, long-continued persistence and thoroughness in carrying out the selected treatment.

Alopecia Areata. It is probable that both views as to the cause of alopecia areata—parasitic and trophoneurotic—are correct. Epidemics of this disease, such as described by Elrenhaft² and Bowen,³ admit of no other interpretation than parasitic origin.

On the other hand is the neurotic case described by Boisser,⁴ in which a man in good health was thrown into great excitement and terror by an accident to his child, followed by tremblings and chilliness and a feeling of tension about the head; within twenty-four hours the hair of the scalp, brows, and beard fell out, so that in a week the patient was entirely bald. There was subsequently a regrowth of white hairs similar to the hair of an albino. The case reported by Bidon⁵ is somewhat similar: A perfectly healthy man, several hours after a severe fright, lost all the hair of his scalp, brows, and eyelashes; some years later, after an injury, the hairs of the rest of the body fell out. At the time of writing

¹ Loc. cit.

² Klin. therap. Wochenschrift, 1899, No. 12; Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 7.

³ Journal of Cutaneous and Genito-Urinary Diseases, September, 1899.

⁴ La Progrès Médicale, June 17, 1899; Journal des Maladies Cutanées et Syphilitiques, June, 1899.

⁵ La France Médicale, 1899, p. 269; Journal des Maladies Cutanées et Syphilitiques, June, 1899.

the man was aged ninety-one years, robust and healthy-looking, except that the loss of hair was now absolute.

As pointing toward a neurotic origin, also, the experiment by Moskalenko and Ter-Gregoryanetz,¹ repeating that made with the same result by Joseph some years ago: The second cervical nerve of a dog was cut through on the peripheral side of the intervertebral ganglion; this was soon followed by the appearance of bald areas. Later experiments² by the same observer upon four dogs and four cats led to the following conclusions: 1. By cutting out the second cervical ganglion in dogs and cats, not only a falling out of the hair is evoked, but a typical alopecia is produced. 2. The cutting of the roots of the nerves also produces alopecia. 3. Casual injury to peripheral nerves is followed by an alopecia, but not of a typical character, the patches not being round. 4. Alopecia can be more easily produced in dogs than in cats or rabbits. 5. In young animals alopecia is more readily produced than in old ones. It appears earlier, and the hair is usually regenerated in a short time.

TREATMENT. Jessner³ reiterates Robinson's good opinion as to the value of chrysarobin in this disease, employed in the form of 5 to 10 per cent. salve. In order to prevent irritation by this remedy to surrounding parts, as the brow and neck, a cap should be worn. Should irritation arise the application is temporarily suspended.

Balzer and Stoianowitch⁴ commend lactic acid for local application. It was employed as 50 per cent. aqueous and alcoholic solutions; the latter is a little less irritating than the former. It is gently tapped on once or twice daily, and treatment discontinued for a time if active irritation is produced.

Jersild⁵ reports favorable results from treatment by concentrated chemical rays. From four to forty-eight daily sittings of an hour each were required. The results were rapid and satisfactory.

NEW GROWTHS.

Keloid. Marie's method of treating keloid by injections of a solution of creosote in olive oil, favorably reported on last year by Balzer and Mousseaux, has also been tried recently by Péré,⁶ who is likewise

¹ Monatshefte für praktische Dermatologie, vol. xxviii., No. 6.

² Wratch, 1899, p. 541; Journal Cutaneous and Genito-Urinary Diseases, 1899, p. 432.

³ Die ärztliche Praxis, 1899, Nos. 1-6; Monatshefte für Praktische Dermatologie 1900, vol. xxx., No. 1.

⁴ Journal des Praticiens, February 11, 1899; Journal des Maladies et Cutanées et Syphilitiques, April, 1899.

⁵ Annales de Dermatologie et Syphiligraphie, 1899, vol. x., No. 1.

⁶ Journal des Maladies Cutanées et Syphilitiques, August, 1899.

impressed with its value. The case was one of large keloidal growth on the side of the neck. A series of injections was given of a 5 per cent. creosoted olive oil (1 c.c.) distributed at four points. Injections were then repeated at intervals of from two to several days. The growth began to diminish, small eschars forming. The injections seemed to act by producing these small eschars, and in that way eliminating fragments of the neoplasm. Some of the injections were painful, but not unbearable. The lessening in the size of the growth was considerable.

Crocker¹ exhibited before the Dermatological Society of London a female patient with a keloid between the scapulæ, caused by a burn five months before. She had had fourteen sittings with electrolysis. The electrolysis was carried out with a surgical needle curved on the flat and passed well under the growth, with the view of causing thrombosis in the vessels of supply. The needle was inserted for about a minute at a time, and the space intervals were about one-quarter of an inch. The strength of the current was about 5 milliampères. The beneficial effects which had been apparent from the first in the way of flattening, softening, and diminished vascularity of the growth had been maintained and accentuated. The intolerable pricking and itching of the keloid, which prompted the patient to apply to the hospital for relief, subsided markedly under the electrolytic treatment. Levisseur,² on the other hand, states that the treatment of these growths by electrolysis has, in his hands, shown only moderate success.

Angioma. Guilloz³ reported before the Society of Medicine of Nancy several cases in which he had used electrolysis with success. This method, as is known, is one that has been now long in use with American dermatologists, and one which has, upon the whole, proved of value. He used the bipolar method—both needles were inserted in the growth. He especially commends their insertion at the border parts, thus circumscribing the growth. Several repetitions were found necessary. Eschars can be prevented, as he states, or at least nearly so, by using only a moderate current for a short time, and repeating at long intervals; and, further, by having the needle shaft just above the point insulated with rubber lac. In operations on growths about the head he considers the bipolar method much the best.

Tuberculosis Cutis. Tuberculous diseases of the integument have received a good deal of attention during the past several years. The tendency is to enlarge the number of such affections to include not only

¹ British Journal of Dermatology, July and November, 1899.

² New York Medical Record, August 19, 1899.

³ Journal des Maladies Cutanées et Syphilitiques, August, 1899.

those diseased conditions in which tubercle bacilli are found, but other affections which, it is asserted, are due to the toxins of the bacilli—the so-called paratuberculoses. Jadassohn¹ and Johnston² have contributed valuable papers bearing on this subject. The French school, as is known, has, upon the whole, expressed strong belief in the so-called paratuberculoses. As Johnston's conclusions give the status of this question they are here given :

1. There is a class of skin affections, analogous to the parasyphilitic, which may be called paratuberculoses. 2. They are not in themselves tuberculous, but develop and flourish on a tuberculous soil. They may be divided into three groups: scrofuloderms, tuberculides, and dyschromia. 4. The scrofuloderms are pure pyodermias, by which characteristic they are separated from the next group, which are only accidentally pustular. 5. The tuberculides include a variety of affections, ranging from erysipelas perstans to lichen scrofulosorum, which are toxicodermas, their characteristic in common. Those which approach lichen scrofulosorum more closely exhibit evidence which precludes the consideration of any toxin other than tuberculin. The status of other—*e. g.*, lupus—erythematosus is in great doubt. 6. Tuberculous dyschromia includes only one affection at present—hyperpigmentation—which, except for its peculiar distribution, is that seen in many other cachexias. 7. The points upon which the right of a disease to admission to this category rests are absence of tubercle bacilli, proved by microscopical examination and inoculation; occurrence in scrofulous or frankly tuberculous patients in more than a bare majority of cases; a pathological anatomy at least comparable to that recognized for tuberculosis; and, finally, if possible, as in the case of lichen scrofulosorum, experimental production of the disease by injections of tuberculin.

Much discussion has taken place over these matters, and, as Johnston rightly remarks, in many instances positive proof of this connection is lacking; his contention being merely that in a large proportion of cases—over 50 per cent.—there is no theory which fits the facts so well.

One of these questionable types of tuberculosis of the skin is that entitled *lichen scrofulosorum*, a case of which in a negro girl is reported by Gilchrist.³ The lesions in this case, as in other cases, consisted of patches of small papules, conical and slightly scaly, whitish and firm. The patient also had a phlyctenular conjunctivitis, and one sister had died of consumption. In the lower portion of some of the histological sections typical tubercles around the hair follicles were observed, but

¹ Berlin. klinische Wochenschrift, November 11, 1899.

² Philadelphia Monthly Medical Journal, February, 1899; Journal of Cutaneous and Genito-Urinary Diseases, July, 1899.

³ Johns Hopkins Hospital Reports, May, 1899.

no bacilli were discovered. As Gilchrist states, however, several successful animal inoculations have been made with cases of this disease.

A case of interest in this respect, too, is that reported by Hallopeau.¹ He describes a case of acneform and necrotic eruption in an emaciated male, aged thirty-three years, which had existed for two years upon the extremities, and which had been characterized by successive outbreaks. Recently pulmonary tuberculosis developed.

The *erythema induratum* of Bazin is another cutaneous manifestation which that writer thought to be scrofulous, and which since has created a good deal of discussion both for and against this view. As referred to in last year's PROGRESSIVE MEDICINE, Audry's investigations seemed to lead to the belief that the disease is not tuberculous, but rather an inflammatory manifestation of a nature similar to erythema nodosum. This view is also upheld by the histological and bacteriological investigations made by Dade.² On the contrary, Thibierge and Ravaut³ reach opposite conclusions, considering it to be among the cutaneous manifestations of tubercle infection due to the bacillus of Koch.

The medical profession is at last beginning to recognize the serious import of a case of laryngeal or pulmonary tuberculosis in its relations with other people. There have been certainly many cases of cutaneous tuberculosis in which infection could be directly traced to another in the family having the constitutional disease; absolute proof it is difficult to give, but it has been sufficiently direct to bear of but one interpretation. Wild⁴ calls attention to methods of infection which are not generally appreciated. He records four cases of lupus of the lobule of the ear which followed the common practice of ear piercing. He gives, further, three cases of examples of tuberculosis verrucosa cutis involving the hands occurring in laundresses who had been washing linen from tuberculous individuals. He also cites six cases of tuberculosis verrucosa cutis and one of lupus vulgaris seated about the gluteal region in children, in several of which there was a history of some tuberculous patient occupying the same house. I have myself seen in several instances the development of lupus in a child in families in which there was a member suffering with pulmonary tuberculosis. Of interest in this connection is the experiment made by Schoull,⁵ who took some hair from the beard of a tuberculous patient, soaked it in a tube of distilled water, and then injected this in a guinea-pig; in a short time the animal developed tuberculosis.

¹ Journal des Maladies Cutanées et Syphilitiques, November, 1899.

² Journal of Cutaneous and Genito-Urinary Diseases, July, 1899.

³ Annales de Dermatologie et Syphilitiques, June, 1899.

⁴ British Medical Journal, November 11, 1899.

⁵ Journal des Praticiens, 1899, No. 22.

The conveyance of the bacillus of internal tuberculosis to the skin is also recorded in the example given by Bloch.¹ It was the case of a woman in the last stage of pulmonary phthisis, who developed tuberculosis cutis about the anus and labia majora, consisting of pale red, deep-cut ulcerations, with a flat base. The diagnosis of the cutaneous disease was based upon both clinical and histological grounds. In such cases the author considers that the infection takes place through the dejections.

TREATMENT. Much has appeared in the way of treatment during the past twelve months, but mostly in the review or confirmation of the newer methods. Finsen's plan of treating the disease with the chemical rays, referred to in last year's *PROGRESSIVE MEDICINE*, continues to excite attention, and very properly. Valdemar Bie² has given a good description of this procedure, and the reader is referred to that paper, as well as that by Bang, quoted last year, for full details of this method of treatment. As briefly stated by Macleod,³ "the leading principle of the apparatus is the exclusion of the heat rays, and this is accomplished by allowing the sunlight to pass through a short cylinder with glass ends, of about fifteen inches in diameter, which contains cold water colored blue with copper sulphate. From this chamber the chemical rays alone emerge, and these are focussed on the diseased part of the patient's skin. Finsen found that the red blood-corpuscles in the skin vessels formed an almost impenetrable barrier to the deep action of the chemical rays, and to obviate this he renders the diseased patch anæmic by the pressure on it of a convex glass fixed by elastic bands or held by a nurse, and on this glass, which in no way interferes with their action, the rays are focussed. This is a brief outline of the essentials in the ideal Finsen apparatus; but the use of such an apparatus is limited to the few sunny months of the year, and during the rest of the time he has to resort to electric light in-doors and a more complicated apparatus. The light is obtained from an arc lamp of between 50 and 80 ampères, the rays from which are allowed to pass through a telescope-like tube containing distilled water, and are then focussed through a glass-ended cylinder pressed on the lupus patch through which cold water is circulating. This latter chamber serves the double purpose of excluding the heat rays and of producing the requisite anæmia of the part by pressure. By having four to six of these telescope-like tubes radiating from the one arc lamp it is possible to treat the same number of patients at one time. The patients are made to lie or recline in a comfortable position, and each

¹ *Dermatologisches Centralblatt*, 1899, vol. ii., No. 4.

² *British Medical Journal*, September 30, 1899; *Philadelphia Medical Journal*, October 7, 1899.

³ *British Journal of Dermatology*, September, 1899.

patient is so placed that the rays emerging from one of the tubes can be focussed on the cold-pressure apparatus, which is fastened over the diseased part of the skin. The patients are under treatment for about three-quarters of an hour every day. At the time of application of the rays the patients complain of no pain, and no form of anæsthesia is required; but after a few hours the diseased area shows a positive reaction, which results after prolonged application of the rays in a more or less complete resolution of the lupus nodules and of the surrounding infiltrated tissue."

The results, according to published reports and the testimony of those who have visited Prof. Finsen's institute in Copenhagen, are good, although as yet the question of relapses remains unsettled. The method has some drawbacks. Treatment takes from four to six months or longer, usually about an hour daily; it requires a special and expensive apparatus and trained assistants and nurses. Macleod justly remarks: "I think that though healing evidently takes place and cicatrices are white and smooth, yet by other simpler methods judiciously employed equally favorable results might be obtained in the same length of time." This opinion is shared by many writers of the past year. My own experience with moderately developed and limited cases, corresponding to that of others, is that the various plans of treatment in vogue, properly carried out, and with perseverance upon the part of the patient, good results could be obtained in a relatively shorter time than that required by the light method. On the contrary, for grave and extensive cases the Finsen method must be considered a great advance in the therapy of the disease, if present promising results are further corroborated.

Somewhat contradictory results continue to be received as to the effect of the Röntgen rays in the treatment of lupus. Without quoting specifically the various contributions, I may quote again from the *résumé* by Macleod:¹ "Several Continental writers have reported excellent immediate results from the applications of Röntgen rays. Notably among these is Neisser, who has gone so far as to state that the prolonged application of the Röntgen rays in lupus causes a complete disappearance of the nodules and the infiltration, and a healing, with the production of a smooth, whitish scar with a slightly pigmented margin. He noted that after several weeks' treatment with these rays the lupus was so far arrested that it no longer reacted to tuberculin injections. Freund, of Vienna, has also remarked on the immediate healing action of the rays on the lupus lesion, together with a resolving of the neighboring enlarged glands. This treatment is also slow, and requires between half-an-hour

¹ Loc. cit.

and an hour daily for about six months to do much good; and if the beneficial action is, as Neisser suggests, due to the production of an inflammatory hyperæmia, and not to actual destruction of the bacilli, it seems only too probable that the nodules and the infiltration will again assert themselves, as the hairs are so apt to do even after the prolonged action of the greatly advertised rays in hypertrichosis."

Holländer¹ continues to speak well of his hot-air treatment of lupus vulgaris, the so-called hot-air cauterization. His results, he states, and as the accompanying illustrations in his paper show, are excellent. The method is not described in detail. Again quoting from Macleod's² admirable paper, the hot-air method is thus described: "The apparatus employed is extremely simple. It consists of a metal tube of about a quarter of an inch in diameter, with a nozzle at one end, while the other end is continuous with an India-rubber tube having an air reservoir and a rubber bulb like that of a Paquelin cautery; beneath the metal tube a Bunsen burner is fixed, by which means the air pumped through the tube can be heated up to about 300° C. The metal tube, where the Bunsen flame plays upon it, can be made to coil two or three times to increase the area upon which the flame acts, and the whole apparatus is fixed together in such a manner that it can be held by a handle by the left hand while the right hand is left free to pump the air through it. But in spite of its simplicity of structure it is a somewhat clumsy instrument to manipulate by one's self, and it is better to allow an assistant to work the air bulb. The operation is extremely painful, and requires complete general anæsthesia. Immediately on application of the heated air the lupus tissue appears to crackle and the patch becomes blanched from an ischæmia. When this whiteness is present over the diseased area, sufficient hot air has been used to destroy the lupoid tissue, and the healthy surrounding tissue will recover. If, however, the hot air is applied for a longer time than is necessary for the production of the ischæmia an absolute charring takes place, which also affects the healthy tissue around the nodules, and from which recovery is impossible, and an ugly scarring is the result. It is thus an instrument which requires great skill in handling, and which, in the hands of the inexperienced, can do considerable harm. The treated patch is dressed with a simple borolanoline dressing or with a dusting powder, and bandaged so as to exclude the air. Immediately after the operation it is extremely painful, but this gradually passes off, and the wound begins to heal by granulation. The cicatrix is not very marked unless the patch has been subjected to what Holländer calls the 'absolute action' of the hot air, which is as radical an operation as complete extirpation with the scal-

¹ Berlin. klinische Wochenschrift, July 12,¹ 1899.

² Loc. cit.

pel, and leaves a horrid scar." As Macleod remarks, the great difficulty of the operation is to avoid going beyond that relative action of the hot air which causes no great destruction of tissue, for it is by no means easy to exactly regulate the air-supply, and on this depends the rapidity of the action. It seems to me, as stated by Macleod, if cauterization is desired, an electrocautery or a Paquelin seem safer instruments; and, though they are said to produce a more indiscriminate destruction of the part under treatment, still they are less painful methods, more easily controlled, and far more convenient. The method has, however, its supporters. Plonski¹ brought before the Berlin Dermatological Society a boy, aged nine years, who had had lupus for several years (site not stated), and in whom the disease was in one sitting by the Holländer hot-air method practically cured. The writer thought that possibly another short sitting would complete the treatment necessary.

The surgical treatment of the disease by extirpation continues to receive support. Nélaton² reports his results from operative treatment in the cases which had been referred to him by the physicians of the Hôpital St. Louis. He refers especially to lupus of the cheeks and the lupus of the nose. The operation consists of complete excision and covering with Thiersch grafts. As to the nose, if the two orifices can be left intact the result is good cosmetically. On the cheeks the excision is carried 6 millimetres beyond the affected area. When the disease involves the eyelids the result is less brilliant. The first appearance of the healed part is not cosmetically promising, but in course of time it becomes quite satisfactory. There is an advantage, the writer states, in making the Thiersch grafts immediately after the operation.

A rather curious case of disappearance of an extensive lupus of the face after an abdominal operation in which tuberculous tissue was removed and a periproctal abscess opened and evacuated, is reported by Seligman;³ he states that after recovery from the operation the lupus gradually disappeared.

Weil⁴ showed before the Société de Médecine de Paris a case of tuberculo-scrofulous ulceration of the neck, having its origin in the cervical glands, treated with great benefit by means of the static battery. The patient was a middle-aged woman. The positive pole was grounded, and to the negative was attached an electrode having many metal points. This latter was held a short distance from the diseased area, sufficiently far to produce small sparks. A sitting lasted ten minutes. After a number of such treatments marked improvement was noted.

¹ Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 12.

² Journal des Maladies Cutanées et Syphilitiques, January, 1899.

³ Centralblatt für Gynäkologie, January 28, 1899; Philadelphia Medical Journal.

⁴ Journal des Maladies Cutanées et Syphilitiques, June, 1899.

Funk¹ has had good results from the external use of guaiacol. Two cases are reported of a disseminated type following measles in young children. The diseased parts were pencilled with pure guaiacol twice daily, in one case for two months, in the other case for three months. Complete cure resulted. The author states that the treatment is painless, but that in cases of lupus other than the disseminated variety it is of no special benefit.

Alivisatos² also reports favorably of this remedy used in the ordinary types. He used 4 parts each of guaiacol and olive oil (sterilized) and 1 part of alcohol. The crusts were removed, and from time to time exuberant granulations touched with a 10 per cent. solution of lactic acid.

Leplat³ also adds his testimony in favor of guaiacol. His cases were in young girls and in lupus of the ordinary type upon the face. His first measure was, however, curetting under anaesthesia, and then repeated applications of equal parts of guaiacol and glycerin, twice daily, and the parts then covered with impermeable dressings. Cicatrization was complete within a few months.

Protopopow⁴ speaks well of a method consisting first in thorough scarification and then applications of creosote. Three cases are reported which were greatly benefited. The odor, as the writer states, is an objectionable feature, and also the somnolence due to the creosote.

Phillipson⁵ indorses the internal use of the fluorine preparations. He first employed sodium fluoride in dose of $1\frac{1}{2}$ grain three times daily. It had a good influence upon the lupus, but tended to disturb the stomach. For this reason he advocates the parafluorbenzoate of sodium, which does not have this disadvantage and yet has the same influence upon the lupus tissue; the dose of this is 7 or 8 grains three times daily. Allied to this is doubtless fluoroform, which Stepp⁶ commends for the disease. The chemical formula is CHF_3 ; it is gaseous, and is taken up by water to the extent of 2.8 its volume, in which form it is given, 1 to 4 drachms daily.

Calomel injections have received further indorsement this year by Du Castel,⁷ who adds a case to those referred to last year, of well-developed lupus of the nose and lip markedly benefited by this treatment; the result of first injection was negative, but after the fifth injection im-

¹ Monatshefte praktische Dermatologie, 1899, No. 5.

² La Semaine Médicale, 1900, No. 1; Journal des Maladies Cutanées et Syphilitiques, January, 1900.

³ La Semaine Médicale, July 5, 1899; Journal des Maladies Cutanées et Syphilitiques, July, 1899.

⁴ Dermatologisches Centralblatt, February, 1899.

⁵ Dermatologische Zeitschrift, 1899, vol. vi., No. 3.

⁶ Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 11.

⁷ Annales de Dermatologie et Syphiligraphie, 1899, vol. x., No. 6.

provement ensued. A favorable report on this treatment in a severe case is made likewise by Brousse.¹ Tschlenow² also reports two cases successfully treated in this way, conjointly, however, with local curetting.

Tuberculin has not been, apparently, much employed during the past year. Heron³ adds another case to those formerly reported; this case did extremely well, and eighteen months subsequently the scar was still perfectly healthy. Doutrelepont⁴ also mentions two cases treated with benefit; he began with small doses and gradually brought it up to 20 mg.

Lupus Erythematosus. The past year, following a very extensive and active discussion of this disease the previous twelve months, has been rather scant in reference to this affection. Heuss⁵ reports two cases of interest. In one, a girl, aged eighteen years, disappearing areas of disease left behind persistent pigmentation; in the second case, a woman, aged thirty-eight years, in addition to the patches of lupus erythematosus upon the face, were found on the shoulders and back pale blue spots and numerous scar-like areas representing atrophica maculosa cutis described by Jadassohn.

Hassler⁶ exhibited before the Bordeaux Anatomical and Physiological Society a man, aged twenty-three years, who, in addition to well-marked areas on the face, presented the disease upon the lips, extending to the mucous membrane, and also an area of disease on the inside of the left cheek; this last is unusual, the disease rarely being observed on the inside of the mouth. The lips were a violaceous red color, with thin, lamellar exfoliation; toward the mouth side were irregular, reddish, small areas, non-ulcerated, scarcely eroded, and scattered over with pale, violaceous points. In the discussion Dubreuilh⁷ referred to a somewhat similar case. He also referred to a case of disease of the lips, which he had seen but once, but which, in view of the condition of the lips in Hassler's case, he was now inclined to believe was lupus erythematosus. In this case the lips were the seat of a somewhat thick covering of leaf-like and friable scales, under which the skin was found red; no other part was affected.

Dubois-Havenith⁸ showed a patient to the Brabant Medico-Chirurgical Society, in which the disease was confined to the scalp and consisted of numerous white and atrophic areas, some suggesting alopecia

¹ Journal des Maladies Cutanées et Syphilitiques, April, 1899.

² Medizinskoje Obosrenije, June, 1899; Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 11.

³ Lancet, October 3 and 14, 1899.

⁴ Vereins Beiträge, No. 21, der Deutschen medicinische Wochenschrift, 1899.

⁵ Correspondenzblatt für Schweiz Aerzte, 1899, No. 1; Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 7.

⁶ Journal des Maladies Cutanées et Syphilitiques, January, 1900.

⁷ Ibid.

⁸ Ibid., April, 1899.

areata and folliculitis decalvans; the more recent exhibiting the usual features of the disease.

TREATMENT. Elliot¹ reported favorably upon the method suggested by Hebra, of frequent and repeated applications of alcohol. He had tried it in two rather extensive cases, and there had been a disappearance of some patches and an improvement in others. Several of his *confrères*,² who had also tried the same method of treatment, stated that they had not been so favorably impressed with its value.

Schiff³ reports satisfactory results from the use of the X-ray. The disease was extensive over the face. The left cheek was subjected to the treatment, and the result was excellent.

Brocq⁴ brings to notice again an application consisting of :

Salicylic acid	.	.	.	.	.	.	.	.	1 part.
Pyrogallol	.	.	.	.	.	.	.	.	3 parts.
Flexible collodion	.	.	.	.	.	.	.	.	40 parts.

To be painted on.

It has, he says, the disadvantage of being dark and temporarily disfiguring. He rightly places this application merely as one of many which each case is apt from time to time to demand for its improvement. Bukovsky⁵ also indorses this method, employing a paint of 40 parts of salicylic acid, 10 parts of pyrogallol, and 100 parts of collodion. I have used a somewhat similar preparation, and with some benefit, but some caution is required lest its action be too energetic.

Lawrence⁶ succeeded in curing the disease by means of scarification and pressure in three cases, in which this method was tried. After dividing the skin affected by means of a scarifier into 400 sections to the square inch, India-rubber pressure pads were applied for several days. In all of them the result was satisfactory, as neither disfigurement nor scar-formation ensued. The writer considers the subsequent pressure of essential import.

Whitehouse,⁷ in one case of very extensive lupus erythematosus, which had failed to be influenced by other plans, prescribed iodoform internally in the dose of a grain after each meal. During the first two

¹ Transactions of Dermatological Society, Journal of Cutaneous and Genito-Urinary Diseases, September, 1899.

² Ibid.

³ Fortschritte der Gebiete der Röntgenstrahlen, vol. ii., No. 4; Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 7.

⁴ Journal de Med. et de Chir. Prat., 1899, June 10; Journal des Maladies Cutanées et Syphilitiques, June, 1899.

⁵ Wiener medicinische Wochenschrift, 1899, p. 1450.

⁶ Intercolonial Medical Journal of Australasia, 1899, vol. iv., p. 259; Journal of Cutaneous and Genito-Urinary Diseases, December, 1899.

⁷ New York Medical Journal, February 4, 1899.

weeks a noticeable increase in the inflammatory condition of the patches was noticed; three months after the institution of this treatment the disease had entirely disappeared, and four months later this good result had remained; the remedy had been continued to this time.

Leprosy. One fact seems now to be pretty generally accepted as to this disease, and that is that it is not hereditary. An interesting case in this connection is that made by Voit,¹ who had the opportunity, in a child of leprous parents dying at the end of five weeks after birth, of making a thorough investigation as to the presence of bacilli in any of the organs or in the skin; the results were negative. The child was born out of wedlock in a leper asylum. Loewald² goes over this question, and reaches the conclusion that the belief is almost universal that the disease is contracted through contagion.

Morrow,³ in an interesting and exhaustive paper on the sources and modes of infection in leprosy, refers to an article contributed by him some years previously in which he referred to the probability that infection in some cases of leprosy takes place through the mucous membranes of the upper air-passages, an observation which has since been made by Jeanselme and Sticker. Morrow says: "In the writer's opinion, most observers err in assuming that there is one exclusive mode of infection in leprosy. It is probable that, like the bacilli of anthrax, glanders, and tuberculosis, the mode of entrance of the parasite into the system is not unique, but multiple. We know that the bacillus of tuberculosis, which presents so many analogies with leprosy, may enter through the respiratory tract, the intestinal mucous membrane, or be inoculated through the skin. I believe that similarly the bacillus lepræ may be introduced through more than one channel of entrance. Direct inoculation through the skin in any of the manifold ways which have been considered, plays, in my opinion, a very important rôle in the propagation of leprosy. In the vast majority of cases I believe that the vehicles of the virus through which contagion is effected are the secretions of the nose and mouth, and that the port of entrance is the mucous membrane of the respiratory and intestinal tract, with secondary infection through the blood or lymphatic system."

The old idea that leprosy might bear some relationship to syphilis in the ancestor has been entirely exploited. For this reason the case reported by Messarosch,⁴ in which syphilis was contracted by a leper, is

¹ Wratch, 1899, No. 17; Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 24.

² Die ärztliche Praxis, 1889, No. 6.

³ Transactions of American Dermatological Association for 1899.

⁴ Wratch, 1899, No. 33; Journal des Maladies Cutanées et Syphilitiques, November, 1899, p. 702.

not without some interest. There was no apparent influence of either disease upon the other. The antisyphilitic treatment had no effect upon the leprous disease. On two different occasions, in administering potassium iodide, this remedy seemed to have given the lash to some extent to the leprous development.

It is often difficult to trace the origin of the disease in some of those attacked; usually a history of having been in an affected country is the only clue, but this is occasionally wanting. This fact is brought out in the case reported by MacMahon,¹ who observed a man, aged thirty-five years, who presented unquestioned symptoms of the disease, and yet had never been out of Great Britain, and had never, so far as he knew, been brought in contact with a leper.

TREATMENT. What to do with lepers until the time is reached when some plan of treatment will have been discovered which will have control over it is a difficult question in our own country. Goodhue² believes that inasmuch as Hawaii has a large number of these cases, that this island would be a good place to send cases discovered in this country. This, it seems to me, would be an unnecessarily harsh measure.

Woodson³ has had a rather remarkable result in one case with injection of Calmette's serum antivenene, corresponding in fact to the favorable influence exerted by this remedy as previously observed by Dyer.

Crocker⁴ refers to a case in which intramuscular injections of mercury sozo-iodolate had been followed by good results, and which three or four years later retained the improvement. In others in which he had used the same method there had been recurrence of the nodules.

As is known, chaulmoogra oil has been the remedy most prescribed, but it has the serious drawback in effective dosage of disturbing the digestion in most cases. Tourtoulis-Bey⁵ has been led to give it by subcutaneous injection, and in the case in which it was tried the result has been favorable so far. Unna⁶ thinks that he has overcome this objection by making a soap of the oil with soda, and giving it in coated pill form. According to his observations so far made, this method of administration has no disturbing influence upon digestion.

Granuloma Fungoides. Most cases of this disease begin, as experience shows, by irregular and continuous outbreaks of cutaneous disturbance, partaking apparently of the nature of eczema and sometimes of urticaria. Later the peculiar mushroom-like tumor-formation stage

¹ Lancet, September 16, 1899.

² New York Medical Record, January 17, 1900.

³ Philadelphia Medical Journal, December 23, 1899.

⁴ Society Transactions; British Journal of Dermatology, December, 1899.

⁵ Journal des Maladies Cutanées et Syphilitiques, January, 1900.

⁶ Monatshefte für praktische Dermatologie, 1899, vol. xxx., No. 3.

ensues. Exceptionally the disease is ushered in with the formation of the tumor growths, without preliminary or accompanying eczema-like symptoms. The case reported by Dubreuilh¹ was in a man, aged forty-four years, in whom the disease had begun a year previously with the appearance of the tumor growths, followed several months later by itchy, papular, and erythematous urticarial efflorescences of the same character usually seen in the precursory stages.

Occasionally the eczematous-looking areas of the first or precursory stage finally become thickened and develop into raised patches, tumor-like, and finally show tendency to ulcerate; such a case is reported by Abraham.²

Granuloma fungoides is rarely seen much before middle life, but it sometimes has its beginning late. Hutchinson gives details of a case in a man, aged seventy years, who had been a sufferer from eczematous eruption since youth.

True sarcomatosis has undoubtedly at times a close relation, at least as regards its tumor-growths, to granuloma fungoides. Minne³ reports such a case, and the question of diagnosis could only be decided by microscopical examination of sections.

TREATMENT. Arsenic by subcutaneous injection seems to be the only treatment that has ever given any lasting benefit in this disease, and this so exceptionally that the diagnosis of the few favorable cases has been called in question. The internal administration of this drug in Abraham's case had been without effect. Hutchinson states that under arsenic, opium, and nux vomica internally, and applications of chrysarobin externally, his case showed some improvement.

NEUROSES.

Pruritus. To manage pruritus successfully requires an investigation, as Tuttle⁴ and Powell⁵ point out, of all possible predisposing elements. Diabetes, albuminuria, uricæmia, rheumatism, intestinal catarrh, and other possible factors are to be excluded. Savill⁶ has found constitutional treatment the most satisfactory. He has used most frequently tincture of gelsemium, chloral hydrate, and the bromides, pilocarpin,

¹ Journal des Maladies Cutanées et Syphilitiques, October, 1899.

² Society Transactions, British Journal of Dermatology, December, 1899.

³ Annales de Dermatologie et de Syphiligraphie, 1899, No. 8.

⁴ Medical News, January 27, 1900; Society Transactions, Philadelphia Medical Journal, July 8, 1899.

⁵ Merck's Archives, November, 1899; Monthly Cyclopædia of Practical Medicine, December, 1899.

⁶ Treatment, December 22, 1899; Philadelphia Medical Journal, May 20, 1899.

and calcium chloride. Besnier¹ emphasizes the importance of avoiding foods which may undergo fermentation. For constitutional influence he commends valerian, musk, and carbolic acid. He has also seen good effects from douching the spine. Parisot,² recognizing the intestinal tract as often faulty, especially in old people, administers as an intestinal antiseptic benzonaphthol joined with an exclusive mild diet. Du Castel³ has occasionally seen some effects from lactic acid in the dosage of twenty to thirty drops daily, largely diluted.

The acting etiological factor is often undiscoverable or irremediable, and relief must frequently be sought from external applications. As Evans⁴ remarks, of all lotions, those containing carbolic acid are the most useful, and may be made still more so by the addition of a few drachms of liquor potassæ or a drachm of a sodium bicarbonate to the pint of water.

The local forms of pruritus, such as pruritus vulvæ and pruritus ani, are frequently most troublesome. Leredde⁵ strongly commends methyl-salicylate :

Zinc oxide,	
Vaseline	ââ 20 parts.
Methyl salicylate	: 1 part.

Hall⁶ records a case of pruritus vulvæ in which the cause seemed to be reflex, due to warty growths in the genital cleft ; relief followed their removal.

PARASITIC DISEASES.

Ringworm. Ringworm of the general surface, as observed with us, rarely presents more than four or five patches. On the other side of the ocean the eruption is more extensive, as in a case reported by Wechselsmann.⁷ The patient was a child who presented numerous and variously sized ringworm areas over the trunk and limbs. The disease had been contracted from a dog, and first showed itself on the neck. The microscopical examination showed the characteristic fungus. We in this country have been probably too apt to put down all such cases reported by our German *confrères* as pityriasis rosea ; but it is possible that we are, judged by this case, as often wrong as right.

Given,⁸ in discussing the several clinical types of ringworm produced

¹ Journal des Praticiens, 1899, No. 23.

² La Presse Médicale, May 6, 1899.

³ Journal des Praticiens, 1899, No. 19.

⁴ Treatment, October 26, 1899 ; Philadelphia Medical Journal, December 12, 1899.

⁵ Journal des Maladies Cutanées et Syphilitiques, 1899, p. 312.

⁶ Lancet, October 7, 1899.

⁷ Society Transactions, Monatshefte für praktische Dermatologie, 1899, vol. xxviii., No. 12.

⁸ British Journal of Dermatology, September, 1899.

by the different fungi states that while the differences given by Sabouraud often obtain, they are by no means absolute. The only clinical sign the writer found characteristic of the presence of any special form of fungus is the white, dusty sheath, or circumpilar collarette, as it has been called, which is often to be seen surrounding the broken and twisted stumps and giving them a frosted appearance; whenever this is present the microsporon Audouini will be found, but the absence of the sheath by no means excludes the presence of the microsporon.

There has been an inclination to doubt the real existence of several forms of fungi in ringworm, but the following observation by Given¹ is a strong argument, as he states, in favor of such belief in the distinctness of the different varieties. Several instances of two or more cases in one family occurred in his observations; thus five cases occurred in one family, and in every instance all cases in one family, who presumably took the disease from one another or from a common origin, presented the same variety of fungus. This writer further says that in his cases the statement made by Sabouraud and Malcolm Morris as to the greater rebelliousness to treatment of the disease when due to the microsporon was not borne out in his cases.

Pelagatti² contributes an interesting paper on the morphology of the ringworm fungi. His investigations practically agree with those of Sabouraud, and prove that the fungi found in the various ringworm cases are not variants of the same fungus, but that they are distinct species.

The possibility that a small-sized carbunculous tumor occurring about the chin may be due to the ringworm fungus, and with extraction of the hairs and proper applications readily relieved, is not, I believe, generally known. Sabrazes and Brengues³ report such a case, in which the tumor was removed by operation; mycelium and spores were found in the growth. Several such instances have occurred in my own observation in which surgeons have operated, believing the growth to be of simple carbunculous or furunculous nature.

An interesting paper on diseases of the nails is contributed by Hutchinson,⁴ in which he refers to the conditions due to the ringworm fungus, recognizing the fact that such disease is not readily recognized except by microscopical examination, and even when the disease is apparently of such nature there is great difficulty in finding the fungus. In the discussion Crocker⁵ mentioned a case of a disease of one nail due to ringworm fungus, which had apparently persisted for forty to fifty years; at the time the patient came under observation there had been

¹ Loc. cit.

² Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 10.

³ Journal des Maladies Cutanées et Syphilitiques, 1899, No. 7.

⁴ British Journal of Dermatology, August, 1899.

⁵ Ibid.

an increase in the disease, two other nails becoming affected and a patch of ringworm appearing on the back of the hand. Careful examination of the first nail affected, as well as the others later involved, disclosed the ringworm fungus. Crocker recognizes the difficulty in finding the fungus even in clear cases of the disease, but stated that to examine with success required very long soaking of the nail scrapings in liquor potassæ—sometimes twelve to twenty-four hours.

TREATMENT. Calderone¹ has found that of the antiseptic remedies advised in the treatment the most efficacious are iodine, chrysarobin, and, perhaps, salicylic acid. The value of iodine, I believe, is much underrated in the treatment of this disease.

Brenta² indorses Martin's good opinion of iron perchloride; he advises in scalp cases an ointment containing:

Iron perchloride	. . . . .	3 parts.
Lanolin,		
Vaseline	. . . . .	5 parts.

For patches on the glabrous skin he uses a solution of the iron salt in benzoin tincture, 1 part of the former to 3 parts of the latter.

In the treatment of ringworm of the nails Johnston³ recommends an application of a saturated solution of pure iodine in a saturated solution of potassium iodide, made twice daily. The mixture, he states, had the additional merit of producing but very slight discoloration.

Favus. Favus of the scalp is not always typical. Allen⁴ refers to a case in a young girl, with lesions on the scalp involving an area of two inches in diameter, which were covered with sebaceous crusts. While the case was really favus, both spores and mycelium having been found, yet the ordinary yellow crusts of favus were entirely lacking, the clinical feature of the case resembling seborrhœa.

Glück reports a case of favus in which, in addition to several patches on the external surface of the foreskin, there were some typical crusts on the corona and the glans. This case, the writer thinks, upholds the view held by Pick, that favus is not necessarily limited to parts provided with hair.

The possibility of favus being contracted in barber-shops is strongly emphasized by Allen,⁵ who from personal knowledge knew of several such patients having the hair cut in such establishments, and also of

¹ *Riforma Medica*, 1899, vol. ii., No. 65; *Monatshefte für praktische Dermatologie*, 1899, vol. xxx., No. 1.

² *L'Ufficio Sanitario*, April, 1899; *Monatshefte für praktische Dermatologie*, 1899, vol. xxx., No. 4.

³ *Society Transactions, Journal of Cutaneous and Genito-Urinary Diseases*, 1899, p. 411.

⁴ *Ibid.*, p. 382.

⁵ *Ibid.*, p. 464.

some cases that were regularly treated in such shops. The several patients referred to were American born.

Bukovsky¹ has been trying some inoculation experiments. He found that vesicular formation was an early stage of the disease in most of his experiments; if the inflammatory reaction was marked the favus crusts did not form, representing, apparently, the abortive form of the disease. When the base was merely erythematous the further development might be either vesicular or scutellar.

He also made injections of a bouillon culture into the bloodvessels of ten rabbits, and once into the peritoneal cavity. If the favus fungus was in small amount (thin emulsion) the animal lived; when in great proportion (thick emulsion) death followed. The facts, however, seemed to show that the fungus itself had no toxic character, but that it was only when a considerable mass was injected, and inflammation excited by the spores blocking up the capillaries of the lungs and giving rise to inflammation, that a fatal result ensued.

Jadassohn² speaks well of a 5 to 10 per cent. pyrogallol salve in favus of the scalp, and with which depilation seems to be unnecessary. Long-continued treatment is, however, essential. In two of the cases he used the X-ray for removal of the hair, which also had a good effect upon the disease. He is inclined to think that a combination of the two plans would give more rapid results.

Calderone,³ on the other hand, has experimented with the action of the various parasitocides on favus cultures, and has found that there is very little effect upon the growth or destruction of the fungus. He is, therefore, inclined to believe that the only certain method of curing the disease is by persistent depilation.

Tinea Versicolor. This disease, with its characteristic fawn-colored, slightly furfuraceous patches and areas, seated generally about the upper trunk, scarcely permits of being confounded with any other. The eruption may, as is known, be quite extensive. In the case referred to by Dubois-Havenith⁴ the eruption had extended down to the wrists, covering almost the entire surface of the arms and well up the neck.

The eruption is rarely seen on other parts except in connection with its presence on the usual situation. In this respect, and also as to the part involved, the case reported by Gottheil⁵ is remarkable; the eruption was limited to one palm. The patient was a Cuban physician, who

¹ Dermatologisches Centralblatt, 1899, vol. ii., No. 8.

² Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 10.

³ Giornale italiano delle malattie veneree e della pelle, 1899, No. 1; Monatshefte für praktische Dermatologie, 1899, vol. xxix., No. 1.

⁴ Society Transactions, Journal des Maladies Cutanées et Syphilitiques, April, 1899.

⁵ New York Medical Record, July 1, 1900.

had observed dark areas on his left palm for some years ; the spots were quite dark—brownish-black ; the fungus was found in the scrapings.

Tinea versicolor, due as it is to a vegetable fungus, should, theoretically, be quite contagious ; but, on the contrary, two or more cases in the same household are rarely observed. It may, however, be conveyed from one member of a family to another, as has been noted by most observers. Coffin¹ reports such an instance. The patient, a woman, married a man who had long had the disease ; seven months later she noticed several areas on her own body—the upper part of the trunk. In this case, too, the eruption was peculiar, inasmuch as it materially lessened in conspicuousness during menstrual periods.

Blastomycetic Dermatitis. Cases of this rare condition continue to be reported. It is probable the future will disclose that the disease is not so extremely rare as at first thought, cases having probably heretofore been classed as tuberculosis cutis verrucosa, and syphilis. A conjoint record is made of a case by Hyde, Hektoen, and Bevan,² in which the leg and dorsum of the hand were involved. Owens, Eisendrath, and Ready³ give another case, in which the disease was seated on the left thigh. Still another case is described by Anthony and Herzog,⁴ in which the disease was quite extensive and seated upon the foot, leg, and thigh.

In all these three cases the organism—blastomyces—was found. The disease is chronic and persistent. In this last case, the author believes, the disease had been grafted upon syphilitic ulcers.

TREATMENT. So far several of these cases have shown marked improvement with large doses of potassium iodide—a fact which has been used to call in question the individuality of the disease, but without sufficient warrant. Local treatment consists of antiseptic applications, incision of abscess formations, and sometimes curetting.

Mucor Dermatitis. Luck⁵ reports a case of mucor dermatosis resembling scabies. The case had the clinical appearance of scabies, except that the search for the *sarcoptes scabiei* was ineffectual.

The patient was a silk weaver, aged fifty-three years, who complained of an affection limited to the axillæ, the skin between the fingers and on the inner side of the arms. The lesions which caused the intense itching and consequent sleeplessness consisted of small elevations con-

¹ Journal des Maladies Cutanées et Syphilitiques, November, 1899.

² British Journal of Dermatology, July, 1899.

³ Transactions of Chicago Medical Society, Philadelphia Medical Journal, July 17, 1899 ; and Annals of Surgery, 1899, vol. xxx., No. 5.

⁴ Journal of Cutaneous and Genito-Urinary Diseases, January, 1900.

⁵ New York Medical Record, August 5, 1899 ; British Journal of Dermatology, October, 1899.

neeted by channels running under the horny layer of the epidermis. There were also some small, dark-red pustules and a few healing spots, some covered with a slight crust like that of psoriasis. On squeezing the first mentioned lesions a serous fluid exuded. Small filaments could be seen protruding from some of the pustules, which were found on examination to consist of portions of mycelium of a species of *mucor*, probably the *mucor corymbifer*. By way of remedies, chrysarobin, ichthyol, and red precipitate were tried without success; but the disease yielded readily to a 3 per cent. menthol and salol ointment.

Scabies. Sherwell¹ has been in the habit of employing the sulphur powder method of treating scabies, and doing away with the messy ointment. His plan is as follows: "The affected members of the family are to take a bath, the adults and older children using a little sand-soap (*sapolio*) over the tougher portions of the affected parts; this soap should not be used for infants. The body and limbs may then be rubbed lightly with a little sulphur lotum; a half-teaspoonful is sufficient for each individual, and no excess of friction is required. The bed linen and underclothing of all kinds should be changed, and between the sheets, or the coverings that come next to the person in bed, a small quantity of the sulphur should be placed in each bed, say a half-teaspoonful; one of the sheets is lifted and a slight blow is given, which causes enough disturbance of air so that the powder is disseminated over the whole internal surface. By repeating the powdering of the bed, say perhaps every other or every third night, by bathing, powdering, and changing clothes in about the same way and at about the same interval for a week, the cure is effected in ordinary cases. Naturally, an aggravated case will take longer, as we know that the ova of the cuniculi take a longer time than that for development."

¹ *Journal of Cutaneous and Genito-Urinary Diseases*, 1899, p. 494.

DISEASES OF THE NERVOUS SYSTEM.

BY WILLIAM G. SPILLER, M.D.

DISEASES OF THE BRAIN.

IN reviewing the literature that has appeared between June, 1899, and June, 1900, I have paid especial attention to clinical neurology. Papers of interest only to the anatomist or pathologist have received slight recognition, although I do not mean to imply that they are not of very great importance. It has been my object to select such matter as may be of service to the practitioner, and to give in a condensed form a critical presentation of the important facts of clinical neurology, with the related pathology, that have appeared within twelve months. If therapy occupies comparatively little space it is because far less attention is paid in the literature to the treatment of nervous diseases than to their diagnosis and pathology, and little that is strikingly new or valuable on the subject of treatment of nervous affections appears.

Hemiplegia. Probably no organic affection of the nervous system is more common or has been better studied than hemiplegia, and yet the subject still offers much opportunity for investigation. Even those who have seen many cases of unilateral paralysis of rapid development find it difficult at times to determine the cause of this paralysis. Hemorrhage near or within the internal capsule is probably the most frequent cause of hemiplegia, and yet hemorrhage upon the cortex of the brain, thrombosis or embolism, softening, tumor, etc., may produce a similar palsy, and in rare cases hemiplegia is spinal in origin. Meningeal hemorrhage causing hemiplegia is rare, but James Hendrie Lloyd was recently able to present to the Philadelphia Neurological Society a brain from a person in whom death had been caused by a large recent hemorrhage upon one cerebral hemisphere. Hemiplegia had been present as a result of this lesion. A positive diagnosis of the lesion could hardly have been made during the life of the patient.

In the aged hemiplegia is sometimes due to multiple areas of softening, and arterio-sclerosis is commonly the cause of this encephalomalacia. Vascular disease has been supposed to be the cause also of the hemiplegia of transient duration. It is true that in the aged—in whom arterio-sclerosis is a common condition—temporary hemiplegia is some-

times observed ; but the necropsies in cases in which no cerebral lesion sufficiently important to account for the paralysis has been found are believed to be rare. Jacobson published in 1893 the reports of a number of cases of hemiplegia without important cerebral lesions, but as no further cases have been found by Werner¹ in the literature, he (Werner) feels justified in reporting three cases. All of his three patients were aged, and in two arterio-sclerosis was marked, and in the third cardiac disease existed. Jacobson attempted to explain this hemiplegia on the theory of vascular disturbance: by local dilatation of the vessels or unequal blood-pressure in the cerebral hemispheres—a disturbance which cannot be recognized post-mortem. Werner gives no other explanation, and does not seem to regard the presence of carcinoma in two of his cases as of importance in relation with the hemiplegia. This, however, is not the first time that I have known of the existence of cerebral symptoms without cerebral lesions in persons with carcinoma, and I shall speak of this a little further on. Symptoms of cerebral disease may in some unknown way be due to the presence of carcinoma somewhere within the body, or to nephritis ; neither condition, however, was present in Werner's third case, and arterio-sclerosis was not excessive.

URÆMIC HEMIPLEGIA. Left hemiplegia, with contracture, rotation of the head and conjugate deviation of the eyes, epileptiform convulsions limited to the paralyzed limbs, lowering of the temperature, and coma, coming on rather suddenly, form a group of symptoms suggesting cerebral hemorrhage. In a case observed by Barth² in which these symptoms were present this diagnosis was carefully considered. The man was forty-seven years old, and at this age cerebral hemorrhage is probably the most common cause of hemiplegia. The presence of albumin in the urine, hypertrophy of the heart, gallop rhythm, increased tension of the arteries, and tumefaction of the liver led Barth to diagnose general arterio-sclerosis and nephritis. The application of six leeches behind each ear, a purgative, and inhalation of oxygen caused rapid improvement, and by the next day the hemiplegia and contracture had completely disappeared.

Unilateral symptoms in uræmia are not easy to explain, and no theory offered is entirely satisfactory. To say that one cerebral hemisphere is a *locus minoris resistentie* is merely an assumption. The diagnosis in a case such as that reported by Barth is not easy, because albumin in hemiplegia does not necessarily indicate nephritis, and, on the other hand, arterio-sclerosis is the common cause of cerebral hemorrhage.

¹ Münch. med. Wochenschrift, September 5, 1899, No. 36, p. 1177.

² La Semaine Médicale, December 27, 1899, p. 433.

Some of the cases described as hysterical apoplexy are probably allied to the class of which Barth's case is an example. At the necropsy of Barth's patient, which occurred not very long after the apoplectic seizure, the lesions of old, diffuse meningo-encephalitis were found, and were not regarded as unimportant. What the relation of these to the apoplectic attack was we do not know, but it is well to note that the lesions were more extensive on the right side of the brain, while the hemiplegia was on the left side.

CEREBRAL SYMPTOMS FROM CARCINOMA. Occasionally carcinoma occurring in some part of the body appears to cause cerebral symptoms by metastasis to the brain. Oppenheim and Bettelheim reported cases of carcinoma in which the cerebral symptoms could not be explained by the necropsy. Sanger¹ observed a woman in whom headache, diplopia, deafness, and frequent vomiting developed one year after the excision of a mammary carcinoma. Right-sided paralysis of the facial and abducent nerves and ataxic gait also existed. Nothing was found at the necropsy that could explain the symptoms; but when a microscopical examination was made collections of cancer cells were detected in the pia of the convexity and at the base of the brain. This case shows how cautious one must be in making statements, based only on macroscopical study of tissue, explaining cerebral symptoms in cases of carcinoma as the result of toxin. The toxin theory, or some similar one, must be used for some cases. For example, Nonne refers to a case in which right-sided hemiplegia and motor aphasia developed suddenly in a man who had a large carcinoma of the stomach. Macroscopical and microscopical study revealed no cause for these symptoms.

Cases of hemiplegia occur in nephritis without detectable cerebral lesions. Why should they not occur in cases of carcinoma? Both may be due to poisonous products circulating in the body, and only by some such explanation can we understand the cases with cerebral symptoms without detectable cerebral lesions. Take, for example, two very interesting cases described by Nonne, in one of which detectable lesions were present. A man with carcinoma of the stomach had on four occasions right-sided Jacksonian convulsions, followed by transitory right-sided paresis. Metastatic carcinoma nodules were found in the left central gyri. In another case of gastric carcinoma metastasis occurred in the pleura, liver, and lymph-glands of the neck. Right-sided Jacksonian attacks occurred almost daily for more than two weeks. No explanation could be found at the necropsy for these symptoms.

The selection by poisons, originating within or without the body, of certain areas in the nervous system is a fact very imperfectly understood.

¹ *Neurologisches Centralblatt*, February 15, 1900, p. 187.

We do not know why certain nerve cells are especially liable to be attacked by certain substances. We see this selective tendency well marked in the peripheral nerves, and we cannot deny that it exists also in the central nervous system. Why do the posterior roots degenerate in tabes? Why do we have the degeneration of the posterior columns in ergot poisoning? Are we to believe that the antero-lateral columns are less exposed to toxic influences? We are bewildered, however, by the unilaterality of some of these so-called toxic cerebral degenerations, and yet we know that the function of nerve cells in the two sides of the brain is not exactly the same in corresponding areas. This is seen especially in the functions of speech. This difference in degree and kind of function may be one explanation for the unilaterality of toxic cerebral symptoms, but it is not entirely satisfactory.

INFANTILE PARALYSIS. Hemiplegia occasionally follows infectious diseases, and the most plausible explanation is that which refers this paralysis to embolism from endocarditis, or, possibly, to uræmia. Pathological investigations have not been sufficiently numerous to settle positively the question of etiology. In a case of hemiplegia following scarlet fever recently observed and reported by Neurath¹ no satisfactory explanation for the paralysis was obtained. Vascular lesions were not found, and in the absence of these the paralysis was supposed to have been a result of the action of toxins on the nerve cells. Sclerotic areas and peculiar cells were seen in the cerebrum, but these were supposed to have existed before the scarlet fever developed, and Neurath thinks they were not the cause of the paralysis.

The pathological study of this case showed that the brain was far from normal, and although the child had appeared as other healthy children until the development of scarlet fever, at the age of two and a half years, it is probable that had he lived longer distinct impairment of mental function would have been noticed. The poisonous products of scarlet fever, like the demands made by advancing years, may have caused clinical manifestations of an imperfectly formed central nervous system. We are well aware of the fact that an imperfect nervous system may give no clinical manifestation of imperfection for a number of years. We see this illustrated in epilepsy, Friedreich's ataxia, family optic atrophy, Huntington's chorea, etc. We know also that infectious diseases occasionally hasten the clinical manifestations of an abnormal nervous system.

POST-ANÆSTHETIC PARALYSIS. Paralysis resulting from the anæsthesia produced in surgical operations is due to different causes. In

¹ Arbeiten aus dem Institut für Anatomie und Physiologie des Centralnervensystems. Obersteiner, 1899, No. 6.

some cases, rare ones, however, it is the result of cerebral hemorrhage. Mally¹ has made a careful study of the literature of this subject, and has found ten cases in which the paralysis was due to cerebral hemorrhage. It would seem, therefore, that diseased bloodvessels may have a greater tendency to rupture during the anæsthetic condition, but the occurrence of such hemorrhage is rare. Other cases of post-anæsthetic paralysis are due to hysteria, but peripheral post-anæsthetic palsies are always the result of compression.

BILATERAL CEREBRAL HEMORRHAGE. The opportunity to observe a fresh hemorrhage in each cerebral hemisphere is seldom given; but Oestreich² reports a case in which a hemorrhage of recent origin was found in each side of the brain, and these hemorrhages were separate from one another. The patient was a woman, aged seventy-three years. She was brought into the hospital unconscious, and soon died. Whether these hemorrhages occurred simultaneously, or one followed the other, is a question which cannot be decided. The diagnosis of such a condition must be extremely difficult or even impossible.

CEDEMA IN HEMIPLEGIA. Extensive œdema of the paralyzed limbs in hemiplegia, such as Allen³ describes, is uncommon, and this writer, after studying the literature of the subject, has found only three cases like his own—one by H. A. Hare, one by Preobrajensky, and one by Gilbert and Garnier. In two of these cases, as in Allen's, large areas of the brain were affected, but no satisfactory explanation of the localized œdema has been obtained. I am inclined to think that nephritis is partially the cause of it, and that the œdema, which in a mild degree is not uncommon in hemiplegia, may become of more importance if the patient has nephritis. The explanation which Allen gives is the one usually offered for the œdema of hemiplegia, viz., that the circulation of blood and lymph is favored by the action of the muscles; hence loss of power in the muscles, on the one hand, and failure of vasomotor control, on the other, seem to be responsible for the production of stasis and œdema on the paralyzed side. A person who has nephritis has a tendency to œdema, and this condition in association with that produced by hemiplegia may possibly cause the extensive œdema sometimes seen in hemiplegia.

HEMITONIA. It was a favorite saying with Charcot that we see only those things to which our attention has been once directed. The statement contains an important truth. Probably hemitonia—i. e., hyper-tonicity of one side of the body—has been observed previously; but von Bechterew⁴ did not refer to any literature on the subject when he reported

¹ *La Semaine Méd.*, November 11, 1899, No. 48, p. 383.

² *Vereins Beiträge*, No. 3, *der Deutschen medicinische Wochenschrift*, Jan. 25, 1900.

³ *Journal of Nervous and Mental Disease*, 1899, p. 471.

⁴ *Deutsche Zeitschrift für Nervenheilkunde*, vol. xv., Nos 5 and 6, p. 437.

three cases of the affection. His patients had what was probably an apoplectic stroke; but, instead of being paralyzed as a result of this "insult," they developed unilateral tonic spasm with little paresis. The condition differed from that of secondary contracture after hemiplegia. The limbs did not assume the positions seen in hemiplegia, and the hand and foot were at times in one position, at times in another, according as the spasm predominated in the extensors or flexors. Von Bechterew believed that a hemorrhage had occurred near the internal capsule, and that the motor fibres were irritated by this, but not destroyed.

I have observed and reported¹ a case of this spastic condition, and with the exception of a case described by F. A. Packard in the discussion of my paper and of von Bechterew's cases I know of no cases in the literature. I should prefer to call this condition *post-apoplectic hemihypertonia*, because the movements occur after the apoplectic seizure and are those of hypertonicity. Von Bechterew is perfectly justified in laying so much stress upon this post-apoplectic hemihypertonia, because it seems to have been overlooked by many writers. It is a condition of tonic spasm of one side of the body, associated with a little weakness, without contracture, coming on after an apoplectic "insult," and probably due to irritation of the motor fibres at some point below the motor cortex. The movements differ from those of athetosis. In the latter we do not have a tonic spasm holding the hand or foot in a contracted position for several minutes—five, ten, or more—then suddenly yielding to a spasm involving other muscles.

STRYCHNINE A CAUSE OF HEMIPLEGIA. The danger of administering strychnine to elderly persons with diseased vessels is not always borne in mind, and the possibility of hemiplegia as a result of taking this drug probably does not occur to many. Grant² believes he has observed a case in which hemiplegia was produced by strychnine; but his opinion is based on the fact that the paralysis developed after the patient, a man, aged sixty-four years, had taken *syrupus ferri phosphatis cum quinina et strychnina*, and on the known action of strychnine upon the body. The evidence is not conclusive. Strychnine increases the blood-pressure, he says, in several ways: it is a cardiac tonic and a vasomotor stimulant; it is a stimulant to the respiratory centre, and has a general tonic action, so that the patient may be tempted to undue exertion and overstrain himself; it is hunger-producing, so that the patient may overeat and the arterial tension in this way be raised. Strychnine has a cumulative action, and the full physiological effect may suddenly develop when the drug has been taken for some time.

¹ Philadelphia Medical Journal, December 16, 1899.

² Lancet, April 29, 1800, p. 1204.

Therefore, Grant believes that if in his patient a cerebral vessel was on the point of rupturing the strychnine might have so raised the pressure within the artery as to cause the weakened wall to give way.

All this sounds very plausible, but it is the old argument of *post hoc ergo propter hoc*. Elderly persons with diseased vessels are liable to cerebral hemorrhage from so many causes that it is impossible to determine whether the strychnine has caused the rupture of the vessel or not. The danger of administering strychnine in these cases should, however, not be forgotten.

Tumors of the Brain. If men would sacrifice their vanity to the extent of publishing their mistaken diagnoses in important cases we should probably learn more than we do from cases in which a very careful diagnosis is made *after* the necropsy has been performed, because the mistaken diagnoses are often the instructive ones. Bramwell's¹ paper, in a recent number of *Brain*, is especially valuable, because he places before us in a condensed form the important details in many cases of intracranial tumor, gives us the diagnoses which he—a most skilful clinician—made from the symptoms, and confesses that in a number of cases his diagnoses were not correct. He has had forty cases of intracranial tumor, with necropsy, under his charge. We learn from his paper that intracranial tumor of considerable size may be entirely unsuspected during life; that the posterior part of the second left frontal convolution may be destroyed by a tumor without causing agraphia; that a large part of the cortical motor area may be destroyed without causing paralysis; that Broca's zone in a right-handed person may be destroyed without causing motor aphasia; that the first and second left temporo-sphenoidal convolutions may be cut off from the other parts of the brain in a right-handed person without causing word-deafness; that a tumor with hemorrhage in the right island of Reil and adjacent parts may produce motor aphasia in a right-handed person; that a glioma of the thalamus may give the symptoms of a growth in the cortical motor area; that a person with a gliomatous tumor of the cerebellum may be practically well for eighteen months under the administration of the iodide of potassium; and that dilatation of the ventricles by the closure of the foramen of Magendie may give the symptoms of tumor, especially of cerebellar tumor. These are some of the more important lessons to be learned from Bramwell's valuable paper, and I can heartily recommend the reading of every word of it to all interested in the exceedingly important subject of intracranial new growths.

TUMORS OF THE PARIETAL LOBE. The case of tumor of the parietal lobe observed clinically by Mills² contains so many important facts that

¹ *Brain*, Spring, 1899.

² *Journal of Nervous and Mental Disease*, May, 1900, p. 244.

we may with advantage pay some attention to the details. In 1894 the patient began to have peculiar paræsthetic attacks in the right upper limb. With the exception of these occasional subjective sensory symptoms he had no localizing signs for five years, although he was more or less neurasthenic, hysterical, and despondent. In June, 1899, he began to show some ataxia in the right upper limb, and later in the right lower limb. In August of the same year all forms of cutaneous sensibility were impaired, the so-called muscular sense was lost, and astereognosis was a marked symptom. As the case progressed paresis and eventually paralysis of the arm and leg supervened, this when complete masking the ataxia. He developed a disorder of speech, chiefly showing itself as a verbal amnesia and fatigue on reading. At one examination he showed a temporary partial right hemianopsia. Reversals of the color fields and contractions of the fields for form, similar to those supposed to be typical of hysteria, were present at several of the examinations. The reflexes on the ataxic and paralyzed side were somewhat exaggerated, ankle-clonus being present. The most important symptoms of brain tumor were absent. He did not have the typical severe headache so often present in cerebral neoplasms, although he complained much of feelings of discomfort, distress and pressure, and occasionally of pain, these sensations being almost uniformly referred to the left parietal or parieto-frontal region, near or about the median line of the head. Vertigo, nausea, and vomiting were not symptoms, and optic neuritis was entirely absent, as shown by repeated careful examinations. From first to last he had no convulsions, not even the slightest local spasm. On November 24, 1899, a tumor was removed by Keen from the superior parietal lobe, and my examination of it showed it to be a perithelioma. The patient made an extraordinary recovery, and has been able, up to the present time, to walk long distances. In diagnosis and surgical treatment the case was brilliantly managed, and the lessons to be drawn from it are most valuable.

Absence of optic neuritis should never forbid the diagnosis of brain tumor. Absence of convulsions does not mean that a tumor is not near the motor cortex. The tumor in the case just referred to probably began as a subcortical growth, and I believe that when a tumor begins beneath the cortex and affects the motor tracts subcortically, any irritation that may be produced in the cortex is counteracted. To use a comparison, it is like cutting a telegraph wire and then attempting to send over this wire a message from the central station. The symptoms of hysteria were so evident in the case that they masked the signs of organic disease.

Mills believes that the case shows that the motor and sensory representations in the cortex are separate, because the sensory symptoms

began first, and were for some time more prominent than the motor. I cannot see, however, that the case shows more than that the sensory and motor areas have not exactly the same limitations, and this I believe is accepted by many. I cannot see that the case indicates that the motor area is not also sensory, but it certainly seems to confirm the view that a large part of the parietal lobe is sensory and not motor.

Another lesson that may be drawn from this important case is that an exploratory operation, when the symptoms indicate the presence of cerebral tumor, should be done, and done early. Those who had the privilege of seeing this patient in his hemiplegic condition before operation, and in his restoration to power within a short time after operation, appreciate the wisdom of the surgical intervention.

TUMOR OF THE LEFT HIPPOCAMPAL GYRUS AND UNCUS. A case reported by Max Linde¹ is important because of the loss of the right half of the visual field in the right eye, the loss of pupillary reflex to light in the right eye, except when the right half of the retina was illuminated, and the presence of hallucinations of smell. The function of the left eye was normal. The hippocampal gyrus is probably the cortical centre of smell, and the location of the tumor in this part of the brain explains the olfactory hallucinations. Tumor masses had grown into the left optic tract, and the bundle of nerve fibres supplying the inner half of the right retina was found degenerated as a result of the destruction produced by these masses; we can, therefore, understand the disturbance of the right visual field and of the right pupillary reflex. Linde is doubtless correct in believing that no exactly similar case has ever been reported. Nature does not often perform such experiments, and such cases are very valuable in our study of the course of the optic fibres.

TUMOR OF THE RIGHT MIDDLE FOSSA OF THE SKULL. The early symptoms of brain tumor may be difficult to recognize, and when such a case as the one so accurately reported by Lewis² is studied it may seem strange that any diagnosis but that of tumor could be entertained. In the clinical history of this case, however, there are some features that must have made an early diagnosis somewhat uncertain. Involvement of the second, third, fifth, sixth, seventh, eighth, and ninth nerves on one side, without any involvement of any other part of the nervous system, seems quite sufficient for the tentative diagnosis of tumor of the right middle fossa of the skull made by Lewis; but let us see how the symptoms developed. The report reads: "In the latter part of August, 1898, the patient had a right lower molar tooth extracted for decay;

¹ *Monatsschrift für Psychiatrie und Neurologie*, vol. vii., No. 1, p. 44.

² *Journal of Nervous and Mental Disease*, 1899.

considerable pain followed this, and very shortly afterward she began to have right-sided earache. There was no discharge from the ear at any time, but in three weeks after the extraction of the tooth, paralysis of the right side of the face gradually made its appearance and steadily increased until it became total." It was not until December 4th of the same year that symptoms of irritation of the right eye appeared. Lewis would hardly have alluded to the extraction of the tooth if it had seemed to him unimportant. A few years ago Frankl-Hochwart described facial palsy following tooth extraction, and it seems possible that an infection may occur from the laceration of tissue produced by such extraction. Earache and facial paralysis on the same side, following the pulling of a tooth, might suggest the existence of a purulent condition of the ear, and as other symptoms developed it might be thought that the purulent process had extended. A careful study of the case made the diagnosis of tumor more probable, but the possibility of abscess must be taken into consideration in a case such as this.

INOPERABLE GLIOMA. The surgeon and neurologist not infrequently meet on common ground, and responsibility rests on both when the question of operation arises in any case of brain tumor. Often the tumor is irremovable, as in a case reported by Jolly,¹ and yet operation in this case was not to be regretted. The tumor was found where it had been located from the symptoms, and no one could foretell that it would prove to be an infiltrating glioma. The operation did not result in the removal of the tumor, but it doubtless prolonged life. The tumor grew through the opening in the cranium made by the surgeon, and before the death of the patient occurred formed an extracranial mass nearly as large as the man's head. No one will deny that the appearance of a man in this condition is most pitiable, and yet there can be little doubt that the intracranial pressure was lessened by the outgrowth of the tumor. It is also noteworthy that in Jolly's case of brain tumor the clinical signs extended over a period of thirteen years. One might be in doubt whether the diagnosis of tumor was correct in a case in which the symptoms had lasted so long, but other cases are reported in which the symptoms of brain tumor have been of equally long duration.

SARCOMA OF THE THIRD AND FOURTH VENTRICLES. An interesting case of sarcoma of the third and fourth cerebral ventricles has been recorded by E. Meyer.² Tumors of the basal ganglia may exist without localizing symptoms, and it is, therefore, not surprising that in a case like this, where a large tumor was within the third ventricle, localizing signs were absent. It is remarkable, however, that a growth 3

¹ Berliner klin. Wochenschrift, July 17, 1899, No. 29, p. 636.

² Archiv für Psychiatrie, vol. xxxii., No. 1, p. 320.

cm. in length, 3 cm. in width, and 2 to 3 cm. in thickness within the third ventricle, producing evidences at the necropsy of intense cerebral pressure of long duration, should not have caused optic neuritis until late in the disease. In tumors situated in this region we expect optic neuritis early. The presence of several sarcomata confined to the cerebral ventricles also makes the case remarkable. It seems that metastasis to the fourth ventricle from the tumor of the third ventricle was by means of the cerebro-spinal fluid.

MENTAL SYMPTOMS IN BRAIN TUMOR. True psychosis is rather rare as a symptom of brain tumor, although mental failure is not uncommon. The heavy expression of the face, associated with blindness, has been frequently seen in cases of brain tumor, and I have at times thought that there is something almost pathognomonic in the appearance of such a patient. Bayerthal,¹ however, has observed a case of cerebral neoplasm in which there were visual hallucinations, ideas of persecution, of marital infidelity, etc. The mental condition was cured by removal of the growth.

DISSEMINATED SCLEROSIS AND BRAIN TUMOR. The resemblance between disseminated sclerosis and cerebellar tumor is sometimes so great that the differential diagnosis may be difficult. Disease of the optic nerve may be the first clinical sign of multiple sclerosis, and Bruns² has found it as such in over 30 per cent. of his cases; and when it assumes the appearance of neuritis the possibility of brain tumor is not remote. As an illustration of the truth of these statements one of Bruns' cases may be mentioned: Attacks of unconsciousness, headache, and vomiting, choked disks with hemorrhages, spastic parietic gait, slight disturbance of speech, and tremor in the limbs led to the diagnosis of cerebellar tumor; but the optic neuritis disappeared later, and the clinical signs of multiple sclerosis became typical. These ocular disturbances are very important, as they may precede the other symptoms of disseminated sclerosis for many years. As Bruns points out, disturbance of vision without changes visible by the ophthalmoscope suggest hysteria, and isolated optic neuritis may be indicative of syphilis, alcoholism, etc. His warning is one we should heed: retrobulbar or papillary neuritis, even after all clinical signs have disappeared, may be the harbinger of disseminated sclerosis, and the significance of the sign becomes greater if the optic neuritis is repeated.

In the discussion following the reading of Bruns' paper Mann referred to a sign made prominent by Uhthoff: the early discoloration of the papilla on the temporal side and the disproportion between the pro-

¹ Münch. med. Wochenschrift, November 14, 1899, p. 1537.

² Verein der deutschen Irrenärzte, Centralblatt für Nervenheilkunde und Psychiatrie, 1899, p. 281.

nounced ophthalmoscopic findings and the slight impairment of vision. This sign should be remembered, especially in doubtful cases of multiple sclerosis, especially when the possibility of brain tumor is taken into consideration.

TUMOR OF THE CEREBELLUM. The diagnosis of cerebellar tumor is very difficult in some cases, especially if the attempt is made to locate the growth in either cerebellar hemisphere. Motor paralysis may be on the same side as the tumor, or on the side opposite to it, according as the pyramidal tract is compressed below or above the decussation; or the pressure may be exerted on the pyramidal tract opposite to the affected lobe of the cerebellum, as in a case reported by Bruns.¹ The diagnosis of a right-sided cerebellar tumor was made because ataxia and weakness began in the left extremities and were more intense in these; but at the necropsy a tubercle was found occupying the entire left cerebellar hemisphere. The pons and medulla oblongata were pushed toward the right and were much flattened on the right side.

Babinski² describes under the name of "asynergie cérébelleuse" a form of inco-ordination resulting from a cerebellar lesion. His case resembles one reported by me in *Brain* in 1896. My patient had this same tendency to fall backward, and the lesion was believed to be in the cerebellum.

TUMORS OF THE MEDULLA OBLONGATA. These are, fortunately, very rare, for the region is one of the most dangerous that the surgeon may be asked to operate upon. Here are the centres of respiration and cardiac action, and accidental pressure upon the vagus nerve would probably have serious consequences. It is possible that even in this region the surgeon may be able to operate and remove new-growths, and, therefore, the few cases of pressure upon the medulla oblongata reported in the literature have practical value. A case of this kind has been studied by Dercum.³ The early symptoms were ataxia of the right arm, some weakness of the muscles of this limb, with loss of the so-called muscular sense, slight diminution of the pain sense, and some disturbance of the sense of tactile localization. The other forms of cutaneous sensation, tactile sense, temperature sense, and pressure sense were normal. Slight ataxia was observed in the right leg. A tumor was found growing from the occipital bone at the foramen magnum and greatly compressing the medulla oblongata. We can understand that a pressure, such as was exerted in this case, upon the motor tract of the right side below the decussation would cause weakness, and the same pressure would disturb the function of the sensory fibres in the antero-lateral as well as the posterior columns.

¹ *Neurologisches Centralblatt*, June 1, 1899, p. 519.

² *Revue Neurologique*, November 30, 1899, p. 806.

³ *Journal of Nervous and Mental Disease*, 1899, p. 477.

It seems to me exceedingly probable that the astereognosis was due to the partial sensory losses, as the author states. Dercum says that since Hoffmann's thesis appeared merely a limited number of cases presenting astereognosis have been reported. It would be a great mistake to suppose that Dercum means by this that the subject is new or unknown. Stereognosis is commonly tested in the clinics of Europe, and affords a ready test of many varieties of sensation. I have employed it for a long time, and have not imagined for a moment that there was anything unusual in so doing. Astereognosis has not been reported as a symptom of tumor of the medulla oblongata, but we can see no reason why it should not exist, and the reports of tumors in this region are not numerous.

Of still more interest, I think, is the loss of the so-called muscular sense as one of the early symptoms. Before the left upper limb became involved the diagnosis between tumor of the medulla oblongata and tumor of the left parietal lobe was not easy. Some evidence exists to show that the so-called muscular sense—which is really the result of a combination of impressions from all the tissues of a part—has its cortical representation in the parietal lobe. As the disease developed and the patient became, within a comparatively short time, paraplegic from the neck down, the diagnosis became less difficult.

One is seriously perplexed when he has to decide whether or not operation shall be performed in a case presenting the signs of tumor of the spinal cord in the cervical region. Just such a case has been under my care for many months. The disease began with pain radiating from the back of the neck into the head and both shoulders and forearms. The neck became very stiff, and movement of the head in all directions was much restricted. I sent this patient to Dr. H. F. Hansell for examination of her eyes, and she returned with a report of double optic neuritis. Such a report as this was sufficient to give a most serious aspect to the case, and it was this optic neuritis which always made me hesitate to advise strongly an operation. Dr. T. S. K. Morton saw the patient and declined to operate—wisely, as the necropsy showed. This patient early lost the sense of smell, and became paralyzed in her upper limbs and later in her lower, and it was this involvement of the upper limbs some time before the involvement of the lower, in connection with other symptoms, which caused me to believe that the tumor was external to the cord, but compressing it. Fortunately a necropsy was obtained, and a large tumor was found compressing the upper part of the cervical cord, the medulla oblongata, and pons. I shall report this case more in detail elsewhere, but I refer to it here as showing how difficult the question of operation may be. Surgical intervention could have been of no benefit.

THE TREATMENT OF BRAIN TUMOR appeals to many ; it has always created the greatest interest in the medical world, but results have not been so gratifying as one might wish. One of the most recent papers on the subject is by Knapp.¹ We are inclined to think that the presence of a brain tumor means a choice between operation and speedy death, but this is not always the case. Knapp says he had a patient under his observation in whom the symptoms of cerebral neoplasm had existed for fourteen and a half years, and he refers to a case reported by Seguin in which the symptoms had existed over eighteen years. Such cases must be regarded as very rare. Knapp recommends the administration of large doses of iodide of potassium and mercury, of bromide and the coal-tar products as medicinal treatment, and this is the treatment adopted probably by most physicians dealing with brain tumor when they do not employ the knife. It is very important to remember that improvement of the symptoms under the administration of antisyphilitic remedies does not prove that the growth is syphilitic. This truth is now clearly recognized by many, and it is also recognized that such improvement may only be temporary. The question of when operation shall be performed, of how long medicinal means may first be tried, is an important one. Knapp advises that medicinal treatment should be employed for one month before operation is undertaken, unless the patient is rapidly growing worse. This seems to me to be very good advice. A month, when the symptoms are not severe, is not much time lost, and we do not wish to resort to the knife if it is avoidable ; but, on the other hand, we do not wish to delay operation when the symptoms fully justify surgical intervention.

The statistics collected by Knapp are interesting. In 514 cases of brain tumor in which operation was performed the growth was wholly removed in only about half the number. About 16 per cent. of all cases are operable, and we may hope to wholly remove the growth in about 8 per cent., but over one-fourth will probably die as a result of the operation, and less than one-fourth will make a complete recovery. Of the rest, a portion will succumb later to a recurrence of the growth. The location of a tumor in the cerebellum does not forbid an attempt at removal of the growth if the symptoms justify it. Knapp's statistics are most disheartening, but we desire facts not theories, and a carefully written paper like this is of aid to us in deciding on the benefits of operation in cerebral tumors. An exploratory operation by a careful surgeon is often of benefit to the patient, even though the growth cannot be removed. Relief of symptoms follows in many cases, and I have seen great improvement following trephining alone. Temporary

¹ Boston Medical and Surgical Journal, October 5, 12, and 19, 1899.

relief is not to be despised if recovery is not possible. No one can tell before an operation has been performed whether a tumor is removable or not, and few things are more distressing to a neurologist than to have a patient die with the signs of brain tumor and to find at the necropsy that the tumor could easily have been removed.

Encephalitis. Oppenheim¹ seems to have had an exceptional experience with the non-purulent form of encephalitis. In one of his recent cases the symptoms following an acute cerebral disease were right facio-brachial monoparesis, tactile hyperæsthesia, and bathyhypæsthesia (diminution of the deep sensibility) of the right hand, and transitory motor aphasia. In teaching this patient to speak Oppenheim had him employ the left hand in writing, because there was a possibility that thereby the speech centres of the right hemisphere would be educated. Some ten years ago Oppenheim observed a case in which aphasia was produced by a tumor of the *right* basal ganglia and of the right temporal lobe. This patient had been right-handed until her seventeenth year, but from that age had become left-handed. As aphasia was produced by a right-sided lesion in a person who had formerly been right-handed and later had become left-handed, Oppenheim concludes that even in youth the right speech centres may replace the left. One hardly feels inclined to criticise any statement made by so careful an observer as Oppenheim, but for my part I should be pleased if he had shown that pressure upon the left hemisphere had not caused the aphasia.

But to return to the case of encephalitis. The disease began with high fever, unconsciousness, slowing of the pulse, epileptic attacks, and vomiting in a person who had chronic purulent otitis. High fever, absence of headache, and tenderness on percussion of the skull, the form of aphasia (motor, and not sensory, the latter occurring in lesions of the temporal lobe, which is a common seat of brain abscess) were believed to be sufficient to make the diagnosis of cerebral abscess improbable.

Cerebral disease beginning like an infectious malady, with transient general cerebral symptoms and persistent focal symptoms—*i. e.*, symptoms resulting from lesion of a definite limited portion of the brain—must lead us to think of hemorrhagic encephalitis.

There seems to be some relation between hemorrhagic encephalitis and otitis purulenta, and Oppenheim suggests that micro-organisms are conveyed from the suppurative process in the petrous portion of the temporal bone to the bloodvessels of the brain, and cause inflammation without the formation of pus. Whether this explanation is correct or not, it is well for us to remember that every acute cerebral disease asso-

¹ Berliner klin. Wochenschrift, March 5, 1900, No. 10, p. 201.

ciated with middle-ear disease is not cerebral abscess. It is not improbable that many clinicians less experienced than Oppenheim would have fallen into the error of making a diagnosis of cerebral abscess in this case. Our memory is not put to a severe test if we are asked to recall the time when a diagnosis of the non-purulent form of encephalitis was received with incredulity, and it appears now as though this disease would be recognized as not a very rare one. Oppenheim has seen at least five cases.

He has reported¹ an interesting case showing the possibility of recovery from the non-purulent form of encephalitis. The diagnosis of this form of encephalitis was made from a combination of the symptoms of a general febrile disease with focal signs—complete motor aphasia and right facio-brachial monoplegia. Pain on pressure in the region of the left ear led to a mistaken diagnosis of mastoid disease. Operation for the relief of this condition revealed nothing abnormal, but seems to have been the cause of the development of purulent meningitis. Paresis of the left abducens was also observed. It is well to remember that these two signs—pain in the region of the ear and paresis of the sixth nerve—may occur in the non-purulent form of encephalitis. The abducens palsy may have been due to neuritis, just as the optic nerve is sometimes the seat of inflammation in hemorrhagic encephalitis. The lesions of purulent meningitis were found at the necropsy, but in addition to these, two foci of sclerotic tissue were discovered in the left third frontal gyrus and the foot of the anterior central convolution. The proof of the curability of hemorrhagic encephalitis in some cases afforded by this report is most important.

In addition, Oppenheim describes a case in which he made the diagnosis of poli-encephalomyelitis, but was unable to find lesions at all commensurable with the symptoms. He discusses the relation of "bulbar paralysis without anatomical lesions" to asthenic bulbar paralysis. The two conditions do not appear to be exactly the same, but our information relative to these diseases is most unsatisfactory.

Aphasia. **ANOMIA.** At the 1899 meeting of the American Neurological Association a very interesting discussion on aphasia was held. A case was reported by G. M. Hammond,² in which anomia without any other form of aphasia resulted from a subdural hemorrhage. This case was thought to disprove the existence of an uniquely localized facial naming centre, because at the operation a sharply delimited lesion of the supertemporal convolution was discovered. I give Hammond's description of the lesion: "Suffice it to say that a linear fracture was

¹ *Deutsche Zeitschrift für Nervenheilkunde*, vol. xv., Nos. 1 and 2, p. 1.

² *Journal of Nervous and Mental Disease*, 1899.

found in the left temporal bone, and that a subdural clot was found which covered the entire superior temporal gyrus. At a point about the junction of the posterior with the middle third of this gyrus there was a hole into which a probe could be introduced to a depth of about an inch and a half at a right angle to the surface of the gyrus. This rupture of cerebral tissue was evidently caused by the pressure of blood, as it was certainly two and a half inches posterior to the fracture, and could hardly have been caused by the direct violence of the blow." Instead of this case disproving the existence of a naming centre in the lower part of the temporal lobe it might be employed as evidence of the existence of such a centre. I am by no means prepared to accept a localized portion of the brain as a "naming centre," but I cannot believe that such an extensive lesion as the one described by Hammond produced no disturbance of function in the surrounding areas, especially in those below the hemorrhage, and on which the clot might act by pressure. Knapp pointed out in the discussion of Hammond's paper that an opening in the skull at an operation does not permit a determination of the extent of an injury. Neurologists fully recognize that symptoms of reaction at a distance are not infrequent in cerebral lesions.

Mills¹ believes that the inability to name objects and persons may be due to destruction of the "naming centre," to destruction of the fibres passing from this centre to the motor vocal speech centre, or to destruction of the motor vocal speech centre by which these impulses are emitted. Anomia or paronomia with associated phenomena may also be produced by destruction of the sensory percept centres and tracts leading from these centres to the "naming" or concept centre. By this we are to understand, I suppose, that anomia may result from lesions in various parts of the speech zone, and that destruction of the naming centre, or of any of the tracts connecting it with any part of the speech zone, will cause anomia.

CENTRE FOR WORD-HEARING. The posterior part of the left first temporal convolution is believed to be the centre for word-hearing. Jolly,² however, reports a case in which word-hearing was preserved to a considerable degree, although the left first temporal convolution was entirely destroyed and the left second temporal was partially involved. Jolly believed that the right hemisphere assumed the function of the left. As the patient lived only a short time after the "insult," the assumption of function by the right hemisphere must have been very rapid. No mention is made as to whether the patient was left-handed or right-handed. It seems that the strict confinement of the speech

¹ *Journal of Nervous and Mental Disease*, 1899.

² *Centralblatt für Nervenheilkunde und Psychiatrie*, October, 1899, p. 593.

centre, to the left hemisphere, which some investigators teach, will not stand the test of recent studies. The case of Byrom Bramwell, to which I referred in my last digest in *PROGRESSIVE MEDICINE*, as well as some others, show us that nature is not governed completely by the laws known to us.

CENTRES FOR MUSIC. The cortical centres for music are probably closely associated with those for speech, and it is only in exceptional instances that one of these groups of centres is destroyed, while the integrity of the others is maintained. A case reported by Probst¹ is such an exception: A woman, aged fifty-five years, had aphasia, both sensory and motor, and could repeat only a few words, and these conveyed no meaning. This woman could sing and articulate the words in singing distinctly. She recognized songs with which she had been familiar, and sang them correctly after someone else, and was able to sing unknown tunes, but without the text. This extraordinary case fortunately fell into the hands of a careful observer. Probst obtained a necropsy, and compared his findings with those in other cases of aphasia with and without amusia. I shall not go into the details of the report; those especially interested in aphasia would prefer to consult the original paper. It appears from Probst's studies, however, that the centre for music-hearing—if I may use the expression—is located in the anterior part of the first temporal gyrus of the left hemisphere, and that the right hemisphere is not capable of assuming the function of this centre when the centre is destroyed. This seems, *a priori*, very reasonable, as former investigations have shown that the centre for word-hearing is located in the posterior part of the first temporal gyrus, and we should expect these two centres to be located near one another. The location of a lesion producing motor amusia is more uncertain; possibly it should be in the second frontal gyrus.

CENTRES FOR SPEECH. It is held by certain writers that the active speech area of the brain is in the *right* hemisphere in *left-handed* persons, and the case reported by Touche² confirms this view. A man, aged sixty-six years, left-handed, but writing with the right hand, presented paraphasia without a trace of jargon aphasia, but he exhibited "jargon agraphia"—*i. e.*, his words when spoken were well-known ones, but arranged so as not to make sense; his spontaneous writing was a combination of letters not spelling anything. He did not appear to understand what he read. It was a case of sensory aphasia. The left hemisphere, to the naked eye, was perfectly normal, but an area of softening was found in the right angular gyrus, and this lesion of the

¹ *Archiv für Psychiatrie*, vol. xxxii., No. 2, p. 387.

² *Comptes-rendus de la Société de Biologie*, 1899, p. 451.

right hemisphere was evidently the cause of the sensory aphasia. Such cases are rare and of much importance.

WORD DEAFNESS. The subject of aphasia is a difficult one, and the various schemes constructed from theoretical considerations have been altered from time to time as pathological findings have revealed their inaccuracies. Thus a case reported not long ago by Dejerine and Sérioux showed that "subcortical" word deafness (inability to understand spoken words, without any other form of aphasia) may result from cortical lesions, and it seems as though the "transcortical" word deafness may be due to lesions similar to those in Dejerine and Sérioux's case. Bischoff,¹ from a careful study of the literature and from pathological findings, concludes that atrophy of cortex and medullary matter of both temporal lobes, especially of the anterior portion of the left temporal lobe, may cause either "transcortical" or "subcortical" word deafness. In speaking of one of his cases he says that it was not a typical case of "transcortical" word deafness, because the patient was able, to some extent, to understand spoken words and had some difficulty in repeating words. Transcortical word deafness, as understood by Bischoff, means loss of the understanding of spoken words, with preservation of the power to repeat these words, but this variety of aphasia does not occur in a pure form.

TRANSCORTICAL MOTOR APHASIA. According to Lichtheim "transcortical" motor aphasia is to be distinguished clinically from cortical motor aphasia by the preservation of speech in the repetition of words and by the ability to write on dictation, and to read aloud. In both voluntary speech is lost. As may be imagined, this form of aphasia is rarely seen, and a recent case reported by Pick² is a valuable addition to the literature, especially as a necropsy was obtained. In Pick's patient there was a great contrast between the ability to read aloud or to repeat words and the disturbance of spontaneous speech. The necropsy showed that transcortical motor aphasia may be due to diffuse atrophy of the cerebral cortex involving especially the entire speech zone. This case does not prove that the symptom complex of transcortical motor aphasia may not be due to a focal lesion, although Pick seems to regard such a possibility as doubtful.

Cerebral Diplegia. Much has been written upon the cerebral diplegia of childhood. The condition is not an uncommon one, and is seen in some of its forms by most practitioners of large experience. According to the classification of Rosenthal, we may find it as generalized rigidity, as paraplegic rigidity, as bilateral spastic hemiplegia, as

¹ Archiv für Psychiatrie, vol. xxxii., No. 3, p. 730.

² Ibid., p. 687.

bilateral athetosis, as the so-called congenital chorea, or as atypical forms. Cerebral diplegia is not always the same as bilateral hemiplegia, and the distinction is a proper one. In the former affection we usually have the lower limbs more affected, the spasticity is greater than the paralysis, and the disease commonly depends on some congenital condition. Collier¹ has written one of the most recent critical reviews on cerebral diplegia and reported two cases, with necropsy, in which primary degeneration of the central motor tract was found. He makes no mention of a condition of the pyramidal tracts described by me in a case of cerebral diplegia—a condition which does not seem to have attracted his attention. I found the pyramidal tracts composed of very fine fibres,² of even finer ones than those in the columns of Goll. Collier thinks that premature birth probably has no causal relation to diplegia, and that the causal relation of birth injuries and asphyxia neonatorum to this condition has been much overestimated. He may be right, but he has not proved the correctness of his opinion and the falseness of the views of many others who have written on the subject. I share the opinion of those who attribute a considerable importance to premature birth as a cause of cerebral diplegia. The mere fact that cerebral diplegia does not follow every premature birth is no argument for the falsity of this view.

Cases of infantile cerebral diplegia with symptoms of bulbar involvement are rare in the literature. Von Halban³ reports a case under the title of pseudobulbar paralysis, but he had no necropsy. The involvement of the bulbar centres in these cases of diplegia is manifested in disturbances of speech, deglutition, etc.; but it seems probable that many of these cases are really forms of pseudobulbar paralysis—*i. e.*, cases in which the connection between the cerebral cortex and the bulbar nuclei is disturbed. In some instances, however, the bulb probably is diseased.

Hypertrophy in infantile cerebral palsy is of very rare occurrence. Some few years ago I made a careful study of the cases of infantile hemiplegia occurring in the Pennsylvania Training School for Feeble-minded Children. With the kind assistance of C. W. Barr and the resident physicians I collected thirty-three cases, and although many curious and some very rare conditions were mentioned in my report,⁴ no case of hypertrophy is described. Clark⁵ says that, excepting his own, no such cases have been reported in America; possibly this

¹ Brain, Autumn, 1899, p. 373.

² Journal of Nervous and Mental Disease, 1898, p. 81.

³ Wiener klin. Wochenschrift, October 5, 1899, No. 40, p. 997.

⁴ Journal of Nervous and Mental Disease, January, 1897.

⁵ Archives of Neurology and Psychopathology, vol. ii., Nos. 3 and 4, p. 513.

is partly due to the fact that attention has not been directed to the subject. Seven cases seem to have been described, and Clark has observed two others. He is not inclined to accept athetosis as the cause of the hypertrophy, and in one of his cases athetosis was never present; but he is unable to give an explanation for this hypertrophy.

Amaurotic Family Idiocy. This condition is now well recognized as a distinct disease, although the cases, even clinical ones, are not very numerous, and, therefore, two recent cases, one reported by Patrick¹ and one by Kuh, are valuable additions to the literature. Patrick's case looked like one of bilateral infantile cerebral paralysis with imbecility or idiocy; but in addition to the history of normal birth, of normal development until the age of nine months, and of gradual inception and slow progression of the disease, the presence of amblyopia, also of gradual development, and the extreme susceptibility of the child to noises, led to the diagnosis of amaurotic family idiocy, which was fully sustained by ophthalmoscopic examination. The abnormal susceptibility to noise is worthy of note, as it is regarded as common in this disease. Death occurred when the child was one year and ten months old, but unfortunately no necropsy could be obtained. Patrick's case seems to be the only one in which the parents were not of the Hebrew race.

Kuh thinks his case differed from those reported by others in the great frequency of the epileptic spasms and in the existence of pronounced hydrocephalus.

Beard examined the eye-grounds in the two cases just referred to, and says that the ophthalmoscopic pictures of this disease are pathognomonic. This statement, of course, is of great value.

Meningitis. The diagnosis of meningitis is not always easy. Disease of the cerebral ventricles, or tumor of the brain, may give the signs of meningitis, as, for instance, in the case published by Lewis, referred to some pages in advance. The cases briefly reported by Münzer² as instances of meningitis illustrate this difficulty, although the absence of pathological details lessens their value. Intense headache of long duration and optic neuritis were the symptoms in one case, and these disappeared later; we are, therefore, hardly surprised to read that the diagnosis of brain tumor was changed to that of serous meningitis. I had the opportunity of examining a case of J. W. McConnell's not long ago, in which ten or eleven years previously the signs of brain tumor were present, but the condition of the man improved very greatly until exposure to high temperature within the last year or two caused a partial return of the symptoms. Chronic serous meningitis seemed to be a

¹ Journal of Nervous and Mental Disease, May, 1900.

² Wiener klin. Wochenschrift, 1899, p. 698.

more proper diagnosis than that of brain tumor in this case, although some cases are reported in which the symptoms of brain tumor existed many years.

SEROUS MENINGITIS. Serous meningitis, or internal hydrocephalus, is probably a more common disease than it is usually supposed to be. Heidenhain¹ has observed four cases of this affection, two of which were with necropsy, and from his study of these cases and of the literature he thinks that internal idiopathic hydrocephalus is a disease *sui generis*—that it may begin suddenly (apoplexia serosa), or develop slowly; that the tendency to recovery is greater in the more rapid form, and that acute exacerbations characterized by decrease in temperature and pulse-rate may occur in the slowly developing variety. The disease may be caused by cold. The increase of the ventricular fluid is not due to primary atrophy of the brain, as shown by the great pressure exerted by this fluid. He recommends morphine and codeine, as they relax the vasomotor spasm, for, according to his view, the disease is caused by a vasomotor reflex neurosis—whatever that may be. We shall probably hear more of internal hydrocephalus in the future than we have in the past.

We value every symptom which is in any degree characteristic, and a statement made by Fischl in the discussion of Münzer's paper demands our attention. Slowing and irregularity of the pulse in the stage of irritation, according to him, may be regarded almost as a positive sign of meningitis; while the absence of this sign, in spite of the existence of other symptoms indicative of meningitis, makes the diagnosis of meningitis doubtful. He is speaking only of cases occurring in childhood. We might offer as an explanation that meningitis is not infrequently found at the base of the brain, and the vagus nerve may in this way be irritated.

The statement as made by Fischl is, I think, too strong, for I am unable to understand why other lesions causing symptoms like those of meningitis may not also cause irritation of the vagus.

A little further on in the report of this interesting discussion I find an important statement by Langer regarding the value of lumbar puncture. He says that the cerebro-spinal fluid in health or in chronic hydrocephalus contains neither a fibrinogenous substance nor a fibrin ferment, but that it coagulates when it contains an inflammatory exudate. He agrees with Neisser, that meningitis serosa should not be diagnosticated unless this coagulability of the cerebro-spinal fluid is observed. I am hardly surprised to read, a few lines further, that Chiari has seen cases in which the fluid obtained by lumbar puncture

¹ Berl. klin. Wochenschrift, December 4, 1899, p. 1078.

did not coagulate, and yet the necropsy confirmed the clinical diagnosis of meningitis; and that Springer observed a case in which meningitis was believed to be present and coagulation was seen in the fluid obtained by lumbar puncture, and yet no trace of an inflammatory process (leucocytes and bacteria) were discovered at the necropsy. Few signs are absolutely pathognomonic, and one must be cautious in making or accepting these positive statements.

EPIDEMIC CEREBRO-SPINAL MENINGITIS. There seems to have been only one case of epidemic cerebro-spinal meningitis *in utero* on record, and this was reported by Gradwohl.¹ "Bacteriological examination of fluid from both the maternal and foetal meninges revealed the presence of the diplococcus intracellularis meningitidis . . . and the maternal and foetal meninges, cerebral and spinal-cord tissue exhibited about the same condition of inflammation and degeneration, such as is found in epidemic cerebro-spinal meningitis." One other case (Herwerden) has been reported similar to this, but Gradwohl thinks it was probably one of *sporadic* cerebro-spinal meningitis, because it was caused by the pneumococcus. Herwerden also did not mention whether the symptoms were present at the time of delivery.

Gradwohl's case is certainly a very interesting one. He evidently does not entertain the idea that the epidemic form of cerebro-spinal meningitis is ever caused by the pneumococcus, as Netter held, and he may claim the support of Weichselbaum, Jaeger, Heubner, Councilman, Osler and others. Osler's² words cannot be misunderstood: "It is highly improbable," he says, "that, as Netter holds, cerebro-spinal fever, either in the sporadic or epidemic forms, is caused by the pneumococcus. . . . The pneumococcus may produce a primary meningitis . . . but both clinically and bacteriologically this form can be distinguished from the disease under consideration." I cannot enter into a detailed account of Osler's excellent paper, and it certainly needs no praise from me. It is based on an observation of twenty-one cases of epidemic cerebro-spinal meningitis. Kernig's sign—inability to extend the knees when the thighs are flexed on the abdomen—was present in all of Osler's cases in which it was looked for.

Kernig's sign, however, does not necessarily indicate the presence of meningitis. It has recently been observed by Widal and Merklen³ in meningeal hemorrhage, and in the case reported by them a meningeal clot was found at the base of the brain. Kernig's sign was the only indication of a meningeal lesion.

¹ Philadelphia Medical Journal, September 2, 1899, p. 445.

² Reprint from West London Medical Journal, 1899.

³ Bulletins et Mémoires de la Soc. Méd. des Hôpitaux de Paris, Décembre 1, 1899, p. 899.

Osler says it is an old observation that the subjects of protracted meningitis, particularly children, often lie with the thighs flexed upon the abdomen and the legs in a state of partial contracture. This "particularly children" brings to my mind a statement made in a recent number of the *Neurologisches Centralblatt*, that young children often sleep with the thighs flexed upon the abdomen and the legs flexed at the knees. I have been able to confirm this statement by observation. It seems possible that the "particularly children" of Osler may have some relation to this fact.

Internal Hemorrhagic Pachymeningitis. In children this disease has received comparatively little attention. I have spoken of the subject in my digest of last year, and have referred to a case of my own in a child of nine years. The report of this case in full has appeared in collaboration with D. J. McCarthy.¹

Burr and McCarthy² describe a clinical picture by which the diagnosis of hemorrhagic pachymeningitis may occasionally be made. In a man who has used alcohol for years, who is syphilitic, or in whom senile changes are marked, the occurrence of an apoplectic or epileptic attack, especially if preceded for some time by headache and vertigo, and not associated with symptoms of brain tumor, may create a suspicion of the presence of hemorrhagic pachymeningitis. It is true we may "suspect" the presence of pachymeningitis from such symptoms, but we can hardly do more. Arterio-sclerosis of the cerebral vessels may cause the same clinical picture. The manifestations of arterio-sclerosis are manifold, and I can hardly think that we have as yet obtained a sufficient knowledge of hemorrhagic pachymeningitis to enable us to diagnosticate it with any certainty. Arterio-sclerosis may cause symptoms of cortical irritation and may also produce multiple foci of softening or hemorrhage.

The patient of Burr and McCarthy after a life of drunkenness developed, when about forty years old, a disease supposed to be epilepsy. He suffered from intense headache, vomiting, left hemiparesis going on to almost complete palsy, failure of memory and loss of mental power. The diagnosis of brain tumor was made. The spinal cord from this man showed old degeneration of the motor tract on the right side and recent degeneration of the corresponding tract on the left side, and it seems not improbable that to the wide-spread lesions of this case were due the symptoms of bulbar paralysis, viz., palsy of the faucial muscles, difficulty in swallowing, in expectoration, in articulation, and in the movements of the tongue and the emotional states.

¹ Journal of Nervous and Mental Disease, 1899.

² Ibid., October, 1899, p. 603.

The lessons Burr and McCarthy would teach from the study of their case are :

1. Hemorrhagic pachymeningitis should not be forgotten as a possible cause of epileptiform fits beginning in adults.
2. The condition may sometimes at least be inflammatory in origin.
3. Alcohol and tuberculosis are both causes.
4. A pseudobulbar palsy may develop in the course of the disease.

Burr and McCarthy regard their case as furnishing a striking example of the pseudobulbar syndrome resulting from a purely cortical condition. It is not clearly stated in their paper that all lesions of the basal ganglia were excluded, but I learn from them that macroscopically no lesions could be seen in these parts.

Sinus Thrombosis. The diagnosis of sinus thrombosis is one of the most difficult the neurologist is called upon to make, and this truth is well shown by the fact that in eight out of nine cases of sinus thrombosis reported by v. Voss¹ the diagnosis made was incorrect. The symptoms resemble closely those of leptomeningitis; in both conditions we find an acute beginning—headache, disturbances of consciousness, often increasing to coma, tonic and clonic convulsions, paralysis, vomiting, vertigo, etc. There are a few symptoms peculiar to each affection, but I think the conviction must be forced upon one by the reading of v. Voss' paper that the clinician is to be admired who can make a correct diagnosis of sinus thrombosis in every case. The resemblances to other vascular disturbances, encephalitis, cerebral tumor, etc., are not to be disregarded, and the lesion is more frequently diagnosticated at the necropsy than during life. Von Voss' report of nine cases is an enrichment of the literature, and it is to be hoped that everyone who observes a case of sinus thrombosis clinically and pathologically, and can add a little to our knowledge of the subject, will not fail to do so.

DISEASES OF THE SPINAL CORD.

Few diseases of the spinal cord are confined to the cord, but the symptoms in some affections indicate so much greater involvement of this part of the nervous system than of any other that we speak of these as spinal diseases. *Tabes dorsalis*, disseminated sclerosis, etc., cause involvement of the brain as well as the spinal cord, and in *tabes* the peripheral nerves are also diseased.

The Conduction of Sensation. The conduction of sensation in the spinal cord is of considerable importance, because the knowledge of the position of the sensory paths will enable us to make more accurate diag-

¹ *Deutsche Zeitschrift für Nervenheilkunde*, vol. xv., Nos. 3 and 4, p. 297.

noses of the extent of lesions that occur within the spinal cord. Two cases which Lloyd¹ has observed are of value in this connection. Both were cases of fracture in the cervical region, and one presented the Brown-Séquard symptom-complex—*i. e.*, paralysis in the limbs of one side of the body and loss of pain and temperature sense in the limbs of the other side. Tactile sense was preserved on both sides. The autopsy showed that the lesions of the spinal cord were almost entirely confined to the same side as the motor paralysis. From a study of this case Lloyd concludes that the fibres for heat, cold, and pain sense ascend in Gowers' tract. This conclusion does not seem to me entirely warranted, because more of the lateral column than Gowers' tract was degenerated, and I cannot see that we are able to exclude the presence of sensory fibres in the antero-lateral column outside of Gowers' tract. Lloyd believes also that tactile fibres ascend in the posterior columns, because tactile sense was preserved and the posterior columns were but little involved in the lesion. This view seems quite probable.

In the second case the lesion was much more extensive, and the posterior columns and direct pyramidal tracts seemed to be the only parts of the cord that had maintained their integrity to any extent. Because tactile sense was not impaired, Lloyd concludes that this case also shows that tactile fibres ascend in the posterior columns.

We may find in the few cases of unilateral syringomyelia that have been reported important data bearing on this question. In 1896, F. X. Dercum and I discussed this subject in a paper read before the American Neurological Association.² In the patient whose case we reported tactile sense was preserved and sense of temperature was absolutely lost in the right upper limb, the right shoulder and the right side of the neck. Some analgesia existed in the right arm. From the first thoracic segment to the second cervical segment the cavity was confined to the right posterior horn, and the intramedullary fibres of the right posterior roots in the corresponding portions of the cord were, therefore, prevented from passing through the right posterior horn. The case seemed to show that the integrity of tactile sensation in the right upper limb was due to the integrity of the right column of Burdach; that the loss of temperature sense in this limb was due to the destruction of fibres passing through the posterior horn, to which was probably also due the partial analgesia of the right upper limb.

The only other cases of unilateral syringomyelia with necropsy are the one of Rossolimo and the one of Dejerine and Sottas. Rossolimo's case was exceedingly valuable. The posterior horn was diseased from

¹ Journal of Nervous and Mental Disease, February, 1900, p. 65.

² American Journal of the Medical Sciences, December, 1896.

the tenth or eleventh thoracic roots through the cervical region, and complete loss of pain and temperature sense in the upper extremity on the same side as the cavity was observed. The evidence is, therefore, quite strong that tactile fibres ascend in the posterior columns, although there are some who dispute this.

The conduction of sensory impulses within the spinal cord has been studied in various ways for many years. Experiments on animals and disease in man have furnished a basis for reasonable conclusions. Münzer and Wiener¹ have performed a number of experiments of a very ingenious character on animals. By closing the abdominal aorta, or by injecting normal salt solution into the gray matter of the spinal cord, they have destroyed the function of the gray matter in the portion innervating the lower limbs, while the function of the posterior columns remained normal. They have separated for a certain distance the posterior columns from the rest of the cord, and from such experimentation have obtained results of the greatest importance in the study of disease in man. Fibres for touch, temperature, and pain, according to them, enter the spinal gray matter and probably come into contact here with new sets of fibres forming the central sensory tracts. The long posterior root fibres in the posterior columns of the spinal cord probably serve the sense of position—the so-called muscular sense—so necessary for the preservation of co-ordination. These fibres are usually degenerated in *tabes dorsalis*, and ataxia is, therefore, common in this disease. A certain number of fibres in *tabes* may still enter the posterior horns, and sensation may, therefore, be only impaired and not lost.

Anæsthesia Produced by the Direct Injection of Cocaine into the Spinal Canal. Zeidler and Seldovitch,² following the method of Bier, have injected cocaine directly into the spinal canal in four cases, for the purpose of producing anæsthesia in the lower limbs. Complete anæsthesia was obtained in the lower extremities within five to nine minutes, and lasted from thirty to fifty-six minutes—sufficiently long to permit operations to be performed without pain. Unfortunately, chill with fever followed the use of the cocaine. Other “inconveniences” of the method are headache, vertigo, vomiting, and nervous excitement. It seems to me very doubtful whether this procedure will ever be of much service. It might be valuable where ether or chloroform could not be used with safety on account of visceral disease, but it is possible that a myelitis might be produced by such intravertebral injections, and permanent paralysis result. The method is at all events too recent to permit a careful opinion to be formed concerning its merits. It is ex-

¹ *Neurologisches Centralblatt*, November 1, 1899, No. 21, p. 962.

² *La Semaine Méd.*, October 18, 1899, No. 44, p. 352.

ceedingly interesting, however, that anæsthesia can be produced by the intravertebral injection of cocaine, and we have yet to see whether this fact will prove of practical value.

The Relationship Between Cutaneous Diseases and Spinal Affections. Brissaud¹ believes that many affections of the skin are of nervous origin, and that those which are due to some alteration of the spinal cord are in bands at right angles to the long axis of the limb, while those which are of radicular origin are in areas parallel to this axis. Skin diseases resulting from peripheral nerve lesions are located in the distribution of the affected nerve. Brissaud has not originated the idea of spinal metameres, but he has applied the theory in a way no one else has done. He presents a number of pictures of skin diseases of various kinds, offering them as evidences of some spinal disturbance. His arguments are most interesting, but are hardly conclusive. The sharp demarcation of eczema, lichen, etc., in lines transverse to the long axis of the limb may indicate that these cases are of spinal origin; but the proof is not offered.

The view of Brissaud, that certain cutaneous affections are dependent upon some alteration of the spinal cord, receives support from an observation of Bruns.² The latter observed a case of diffuse scleroderma. In the lower part of the legs the atrophic stage had been reached; in the thighs the upper border of hyperæmic areas corresponded with the upper limit of the distribution of the first posterior lumbar roots, as given by Head. Bruns thinks that in his case the proof was given that the diffuse scleroderma was owing to some change in the spinal cord or spinal ganglia.

Spinal Localization. This metameric theory employed by Brissaud and Grasset to explain segmental disturbance of sensation rests only on clinical observation. Van Gehuchten and Nelis³ advance a motor metameric theory, according to which the groups of cells in the spinal cord represent segments of a limb; thus in the cervical cord there should be three groups of cells—one for the hand, one for the forearm, and one for the upper arm. Three groups should also be found in the lumbo-sacral cord, for the lower limb. Muscles and nerves are not represented by special groups in the spinal cord, and the oculo-motor and facial nuclei cannot be divided into groups for distinct muscles. Van Gehuchten and Nelis offer evidence for the view that the lower of two groups in the lumbo-sacral cord is concerned with the innervation of the foot, and the upper with the innervation of the leg as high as the

¹ *Nouvelle Iconographie de la Salpêtrière*, 1899, No. 2, p. 69.

² *Berl. klin. Wochenschrift*, July 10, 1893, No. 28, p. 626.

³ *Journal de Neurologie*, August 5, 1899, No. 16.

knee. This segmental distribution explains the segmental involvement of the limbs in certain spinal diseases, such as syringomyelia and progressive spinal muscular atrophy, and perhaps enables us to understand why the hands are often first involved in the two diseases mentioned.

Tabes Dorsalis and Parietic Dementia. In placing tabes dorsalis and parietic dementia together I do not wish to imply that I share the opinion of those who hold that these are one process. This question has not yet been satisfactorily answered, but there are many reasons why we may discuss these diseases under one heading.

No disease of the nervous system has been more studied than tabes dorsalis, and yet new symptoms are constantly being observed. A year or two ago we heard of hepatic crises from Krauss—attacks of severe pain in the region of the liver, resembling those from the passage of a gallstone; and a little over a year ago Pel¹ described ocular crises. He now reports the occurrence of peculiar attacks, to which he gives the name of febrile crises. His patient had symptoms of tabes dorsalis, but in addition to the well-recognized symptoms of this disease he had five attacks of severe pain in the extremities, associated with vomiting, high fever, free perspiration, and involuntary muscular movements with rigidity of certain muscles. One attack described in detail lasted over twenty-four hours, although the symptoms became less severe as the attack came to an end. A sensation of chilliness without a distinct chill announced the beginning of the seizure. In the last attack described, ocular crises were present, consisting of severe pain in the eyes, intense photophobia, secretion of tears, and congestion of the head. The eyes were red and inflamed, as though they had been violently rubbed. The thought would probably occur to everyone hearing of these febrile crises for the first time that they were independent of the tabetic disease. Pel has sought to answer this objection on the ground that five very similar attacks occurred, and no other symptoms were present which would justify the diagnosis of intermittent fever, influenza, angina, etc. It seems as though there would be no limit to the painful attacks the unfortunate sufferers from tabes must endure. We have had gastric, laryngeal, pharyngeal, rectal, vesical, and other forms of crises, and now we learn of hepatic, ocular, and febrile crises.

Tabes seems to be an inexhaustible field for study. We have learned to recognize many different disturbances of sensation occurring in the disease. Analgesia of the rectum, of the bladder, of the urethra, of the testicle, and mammary gland have been observed, and now Abadie and Rocher² report complete loss of sensation in the eyeball on pressure.

¹ Berliner klin. Wochenschrift, 1899, No. 26, p. 561.

² Revue Neurologique, December 15, 1899, p. 859.

Muskens¹ has found that retardation of pain sense is not uncommon at the border of analgesic areas in *tabes dorsalis*, where the tactile sense is normal.

Prof. Adamkiewicz,² of Vienna, holds certain views in regard to *tabes* which are not universally accepted. He sides with those who do not believe that *tabes* is a syphilitic disease, although he does speak of a peculiar form of *tabes* which is syphilitic. According to Adamkiewicz, *tabes* begins in distinct groups of fibres in the posterior columns, forming the shape of the italicized letter *f* (*f*), and not in the posterior roots, as most investigators hold. He describes a case of *tabes* in which a severe trauma of the spinal vertebræ preceded the tabetic symptoms for about four years, and was believed to be the cause of the tabetic disease. Sensation was disturbed in the lower part of the body from the seat of the old vertebral fracture, and, therefore, one of the important symptoms of *tabes* had a direct connection with the injury to the spine, and presumably to the spinal cord. These are the facts which were regarded as the chief evidences of the existence of traumatic *tabes* in the case. Adamkiewicz does not explain the traumatic *tabes* by supposing that the trauma makes evident a *tabes* already existing, but latent (Morton Prince); on the contrary, he holds the view that trauma, by concussion of the spinal cord, can produce the tabetic degeneration in a spinal cord previously healthy. Perhaps others may have less hesitation in accepting this case, without necropsy, as a proof that trauma may lead to the development of *tabes* in a previously perfectly healthy spinal cord, but I am unable to regard it as a proof. Trauma may possibly cause *tabes*, but no indisputable evidence of this has yet been offered.

TABES IN CHILDREN is rarely seen; possibly because the disease depends usually on a previous infection of the patient with syphilis. A few cases of infantile *tabes* have appeared in literature, and one has recently been reported by Dydynski.³ The first symptoms began when the child was only five years old. The diagnosis of *tabes* was based on pain in the legs, absence of the patellar, Achilles, and plantar reflexes, rigidity of the pupil, incontinence of urine, and at times retention. The father had acquired syphilis a number of years before the birth of the child.

The relation of inherited syphilis to *tabes* has not been very clearly shown. Homén⁴ says that most of the cases in which an attempt has been made to establish this relation are open to objection, and he reports a case bearing on the subject. A boy whose father had contracted

¹ *Journal of Nervous and Mental Disease*, 1899, p. 424.

² *Berliner klin. Wochenschrift*, 1899, Nos. 23 and 24.

³ *Neurologisches Centralblatt*, April 1, 1900, p. 298, and April 15, 1900, p. 331.

⁴ *Ibid.*, May 15, 1899, No. 10.

syphilis before the birth of the child began to show evidences of tabes in about his twelfth year. Homén thinks that the disease in the son was undoubtedly tabes, and that syphilis and alcoholism in the father were not unimportant factors in the case.

Most cases of supposed infantile tabes are really cases of Friedreich's ataxia. It is well known that many years ago, when one of the Parisian physicians was about to present before one of the medical societies what he believed to be a case of tabes in early life, he was saved from making an error in diagnosis by Charcot. Friedreich's disease is now so generally recognized that confusion of it with tabes is not so likely to occur, and it would seem, therefore, that in very rare instances tabes may appear in early life; indeed, a number of cases have been collected by Dydyski. I am not aware that a case of this kind without syphilis in one or both parents has ever been observed.

OCULAR SIGNS IN TABES DORSALIS. The frequency of rigidity of the pupil to light in diseases of the spinal cord (tabes, parietic dementia) has led Wolff¹ to attempt to determine whether a degeneration only in the cervical region is found in all cases of tabes or parietic dementia with rigid pupils and preserved patellar reflex; whether the degeneration is found in the lower part of the cord when the pupil is normal and the patellar reflex is absent; whether the posterior columns are degenerated throughout their extent, or areas of degeneration exist in the cervical and lumbar regions, when the pupil is rigid and the knee-jerk is lost; and, finally, whether the cervical and lumbar regions are intact when the pupils and the knee-jerks are normal. Nine cases studied clinically and pathologically seem to show that degeneration of the posterior columns in the upper cervical region stands in close relation to the rigidity of the pupils. The various other propositions advanced, except the last, seem to be answered in the affirmative from the pathological investigations. Rigidity of the pupil may probably exist without anatomical changes, but not in cases of tabes or parietic dementia. These interesting findings need confirmation, but suitable cases are not easily obtained. It is an exceedingly important statement that degeneration of the posterior columns in the upper cervical region is in close relation to the Argyll-Robertson pupil. This does not refer to a degeneration confined to the columns of Goll in the cervical region, and resulting from disease of the posterior roots low in the cord.

A change in the relative width of the pupils, occurring frequently within a short period, is known among the Germans as "springende pupillen." It has been regarded as a bad omen, and has been observed as an early sign of tabes and parietic dementia. Koenig² has seen the

¹ *Archiv für Psychiatrie*, vol. xxxii., No. 1, p. 57.

² *Deutsche Zeitschrift für Nervenheilkunde*, vol. xv., Nos. 1 and 2, p. 122.

sign in a case of infantile cerebral paralysis, and was the first to do so. He does not regard it as necessarily carrying with it a bad prognosis, for it has been observed in functional disturbances of the nervous system. The sign is a rare one, and further observation is needed before we can form a just estimation of its value.

After a very painstaking examination of a number of cases and a careful study of the literature, Fränkel¹ has come to the conclusion that some of the ocular palsies of tabes are probably sensorimotor palsies—*i. e.*, they are due to disease of the sensory portion of the reflex arc. Palsies of this character have not been thoroughly studied, and it is to be hoped that Fränkel's paper will awaken interest in the subject. Some experiments on animals by cutting the posterior spinal roots have been performed in order to determine what results has injury of the sensory portion of the reflex arc upon the motor portion, but the interpretation of the results by the different investigators has not always been the same.

HYPOTONICITY OF THE MUSCLES IN TABES, and imperfect fixation of the joints thereby, increase the difficulty of locomotion. To partly overcome this Adler² suggests that a knee stocking should be worn to support the knee-joint, and that a sort of bathing tights may be worn for the hips when support is needed at these parts. The idea may prove to be of value, for everything that adds to the comfort of these unfortunates is worthy of a trial.

THE RELATION OF TABES TO PARETIC DEMENTIA has long been disputed, and has recently been the subject of discussion before the Pathological Society of London³ during several meetings. The identity of the two diseases and their dependence upon syphilis were upheld by some. After reading the interesting remarks made during this discussion we cannot feel that the problem has been solved.

Paretic dementia, however, seems to have some relationship to tabes, and is as rare in the young as is tabes; but Mott³ has collected twenty-two cases occurring between the ages of eight to twenty-three years. Eighteen of these were observed by himself. The sexes seem to be equally represented. Congenital syphilis, as might be supposed, is an important cause in this early form of paretic dementia.

Krafft-Ebing⁴ says that paretic dementia is regarded everywhere as on the increase in modern society, although an attempt to support the statement by scientific or statistical proofs would be difficult. Those

¹ *Journal of Nervous and Mental Disease*, October, 1899, p. 616.

² *Neurologisches Centralblatt*, February 1, 1900, p. 102.

³ *Lancet*, 1899, vol. ii.

⁴ *Arch. of Neurology from the Path. Laboratory of the London County Asylums*, 1899. Cited by *La Semaine Méd.*, December 27, 1899.

⁵ *American Journal of Insanity*, vol. lvi., No. 4, p. 645.

who have listened to his lectures know the importance he attaches to the strain of life at the present day in the causation of paretic dementia. The rush to get rich, the modern inventions, with their demands, all tell in the increase of the disease. I cannot help thinking that, notwithstanding these causes, the increase is not so great as at first thought appears. Physicians in general practice possibly recognize the disease earlier, and, therefore, more cases are reported. It seems to be the opinion of most authorities, however, that there is an actual increase in the number of cases of paresis, and Krafft-Ebing states that the disease now seeks out its victims at a much earlier period of their lives. Lately the disorder has been observed in childhood and youth, and it is on the increase among females.

The relation of syphilis to the disease is one of great importance. An individual may be the victim of syphilis, hereditary or extragenital, which may escape notice, as immunity may be the only evidence of previous infection. In rare cases a reinfection may occur. The only possible way of clearing up the doubt in regard to the relation of syphilis to tabes and paretic dementia would be by inoculating the doubtful cases with the syphilitic virus. This inoculation has been done in paretic dementes. Krafft-Ebing says that nine clinical histories were given to him for inspection. All nine cases were typical examples of paresis occurring in males, and in regard to the exactness of the diagnosis not the slightest doubt can exist. In all the most searching inquiries and the strictest clinical examination had failed absolutely to bring out any proof at all of a previous syphilitic infection. The physician who made the investigation, for whose ability and precision Krafft-Ebing vouches, determined to test these nine cases, which were apparently negative, by inoculating the patients with the syphilitic virus, since this procedure was the only one by which the existence of a latent syphilis could be determined. The patients were in a hopeless stage of a fatal disease. The virus for inoculation was taken from cases of syphilis of intense virulence. All the nine cases were carefully observed for a period of one hundred and eighty days, with the exception of one, which was watched for seventy-two days. In all of these inoculated individuals no symptoms of a syphilitic reaction occurred at the site of inoculation, in the glands or in any other part of the body. In view of the fact that a period of one hundred and eighty days is regarded as the extreme limit of the period of inoculation, it was only justifiable to record the experimental inoculation with the syphilitic virus as having proved ineffectual. The immunity in these nine cases Krafft-Ebing thinks can only be interpreted as signifying the existence of a latent syphilis. The cases certainly seem to show the great rôle syphilis plays in the etiology of paretic dementia.

Startling as these investigations are, they do not equal those performed by a certain physician of the Palatinate, who, in 1854 and 1855, inoculated eleven sane individuals, who had apparently never had lues, with the syphilitic virus. In all these cases syphilitic infection followed. Krafft-Ebing says analogous tests were made by Gibert, Guyenot, and von Bäreusprung. Krafft-Ebing shows a strong tendency to make syphilis a *conditio sine quâ non* for the occurrence of general paralysis. Overwork, debauchery, mechanical and psychical shock may indeed be contributory factors to the prevalence of paresis at the prime of life; but there are countless numbers of cases in which such injurious influences either cannot be traced or at least have not been of any particular intensity. It is known positively that in paresis no specific (luetie) process, whether in the form of a gummatous formation or of a syphilitic arteritis, is to be found in the brain of paretics, and its absence may explain the failure of antisymphilitic treatment in this disease.

It is not so certain that paresis is on the increase in America. We do not maintain a large army quartered in our cities, as is done in Europe, and it is probable that we have less of the disease among us. The relation of syphilis to paretic dementia, as shown by Krafft-Ebing, must interest the sociologist as well as the physician, but the struggle to control the spread of syphilitic and parasyphilitic diseases (tabes and paretic dementia) is a serious one. Berkley, at a recent meeting of the Philadelphia Neurological Society, made the statement that paresis is on the increase among the negroes of Baltimore. Are they any more liable to syphilis than they were in former years?

TABES OR GENERAL PARALYSIS OCCURRING IN HUSBAND AND WIFE has been comparatively rarely observed. This is due to many causes. Both diseases probably result from syphilis as the most common cause, but they may not develop until years after the infection, and rarely both husband and wife come under the observation of the same physician. A history obtained from a person afflicted with paretic dementia is of very doubtful value, and sometimes no reliable history can be obtained from the friends or relatives of the patient. Often the physician does not make special inquiries in relation to the occurrence of these diseases in married couples, and so we have only sixty-nine cases (Raecke) reported in the literature in which both husband and wife had paretic dementia or tabes. In view of the fact that a syphilitic man often infects his wife, the number probably does not convey a correct idea of the frequency with which both man and wife manifest these diseases. Six more cases should be added to the sixty-nine collected by Raecke.² It appears from these sixty-nine cases that general

¹ Monatsschrift für Psychiatrie und Neurologie, October, 1899, vol. vi., No. 4, p. 266.

paralysis occurred in both husband and wife twenty-seven times; general paralysis occurred in the man and tabes in the woman fourteen times; tabes occurred in both twenty-two times, and general paralysis occurred in the woman and tabes in the man six times. Man would thus seem to be more liable to paretic dementia than woman, and to become diseased first, which is probably due to the fact that the man first acquires syphilis. A recent observation of tabes in husband and wife has been published by Francine.¹

PARALYSIS IN TABES. Occasionally paralysis has been seen in the distribution of the peroneal nerve in cases of tabes, and this has been believed to be due to neuritis. Finkelnburg² has observed two cases in which he was able to attribute the peroneal palsy to pressure. The pressure in the first case was so slight that it might almost have been overlooked. The man sat with his legs crossed for a long time, but he was alcoholic and had tabes, and both of these conditions rendered his nerves more liable to the evil results of pressure. The palsy in the second case was due to pressure of the peroneal nerve from an arthropathy of the knee-joint. In every case of peroneal palsy it is well to bear in mind the possible existence of tabes. It has been my experience that alcoholic persons seem to be especially liable to palsy from slight pressure. It is not always easy to determine the tendency in such subjects.

THE TREATMENT OF TABES DORSALIS. Dana³ has presented the results of his personal studies and experience in tabes. He thinks that if there were no syphilis there would probably be no tabes or paretic dementia. He therefore holds very much the same views as Möbius. Dana seems to think that a man may have latent syphilis; that he may have had unconsciously an infection from a syphilitic person which later may be the cause of tabes. To use his own words: "There is something which gets into the system, runs a course unaffected by mercury and iodide, shows absolutely no detectable symptoms, and ends finally in causing a systemic degeneration of the nervous system." Of course, if a man may have this unknown syphilitic substance in his body without any clinical manifestations of syphilis at any time, it is hopeless to try to prove that syphilis is not a cause of tabes. Dana finds that many tabetic patients are neuropathic.

The treatment, therefore, which Dana employs for tabes is as follows: In the first and second stages of the disease, when a history of distinct syphilitic infection is obtained, hypodermatic injection of $\frac{1}{20}$ grain of corrosive sublimate in 30 minims of water, to which $\frac{1}{40}$ grain

¹ American Journal of the Medical Sciences, May, 1900, p. 543.

² Monatsschrift für Psychiatrie und Neurologie, October, 1899, vol. vi., No. 4, p. 286.

³ Medical Record, November 18, 1899, p. 729.

of cocaine is added, should be given once a day, or twice if the symptoms are urgent. These injections should be made for two to four weeks, according as constitutional symptoms appear. The patient should also take about 30 grains of iodide of potassium daily during this time. After the mercurial course the iodide is rapidly followed, 300 grains a day being given, if possible, but no advantage is gained by larger doses. This medication is continued for about four weeks, so that the patient is under treatment for six to eight weeks. He should have during all this time a warm bath twice a week, and oftener if he desires it. If the hypodermatics are not well borne the patient should receive inunctions of about 1 drachm of mercurial ointment for six successive days and a hot bath on the seventh, this being repeated for three or four weeks. Mouth washes should be used. The tonic treatment should then be given for two months, and Dana recommends the tincture of iron and dilute phosphoric acid, 30 minims daily, or the glycero-phosphate of lime or soda, 40 grains daily. The warm baths are to be continued. Counter-irritation to the spine by the cautery or blisters is recommended, and the patients should be made to rest as much as possible. The antisyphilitic and bath treatment should be repeated at least once a year. When the history of syphilis is not obtainable it is utterly useless to give the mercury and iodide treatment, and the tonic and bath regimen is advised; but better still is the method of treatment consisting in putting the patient to bed and giving him large doses of strychnine and small doses of morphine by hypodermatic injection. The doses should be at first very small, and should be very cautiously and slowly increased. For example, twice a day $\frac{1}{60}$ grain of strychnine and $\frac{1}{60}$ grain of morphine may be given, and after a week these doses are increased to $\frac{1}{30}$ grain; at the end of three weeks to $\frac{1}{20}$ grain, and at the end of five weeks to $\frac{1}{15}$ grain. The latter dose may sometimes be increased to $\frac{1}{10}$ grain, but never more. These doses are then decreased gradually to $\frac{1}{20}$ grain at the end of the sixth week. Phosphates and iron may be given at the same time. After the course just mentioned the patient is placed on the two months' tonic treatment, and 20 to 30 grains of iodide of potassium are given with it daily. This tonic rest-treatment, if it proves satisfactory, is to be repeated once or twice a year, if possible, as is also the iodide treatment in cases in which this is indicated.

Wiener¹ has obtained very encouraging results in the treatment of the ataxia of tabes dorsalis by compensatory gymnastics. He does not employ the complicated apparatus recommended by Fränkel, but begins by having the patients perform certain movements while lying on their

¹ Medical Record, July 22, 1899.

backs, and later allows them to sit up, and finally to stand and walk while performing these movements. The objects to be attained should be fully explained to the patients so as to give them an understanding of what is expected of them, and the movements should be performed under the eye of the physician. These movements are intended to train the patients in co-ordination, and are such as are suggested to every physician attempting to teach simple forms of co-ordinated action. There is great hope for the ataxic patient in this method, and one of the most unpleasant symptoms of tabes may thus be lessened in intensity, in some cases even to a considerable degree.

One must be astonished, when his reading of neurological literature has been of limited extent, to see how some men assert that syphilis is the cause, even the only cause, of tabes; while others doubt whether syphilis plays an important rôle in the etiology of the disease. Still more astonishing is the positive tone in which Sarbó¹ recommends an antisiphilitic treatment in every case of tabes without giving sufficient proof that this treatment is of benefit. I say astonishing, because skepticism regarding the benefits to be derived from the antisiphilitic treatment of tabes seems to be increasing every year, instead of diminishing, and it has become necessary for everyone to produce facts and not mere assertions if he wishes to convince us of the benefit of the antisiphilitic treatment.

The simultaneous administration of mercury and the iodides in the treatment of syphilis is recommended by many, but Tschiriew² believes that the iodides hasten the elimination of the mercury, when it should be retained in the system, and increase the danger of stomatitis. He recommends that inunctions of 5 or 6 grammes of mercurial ointment, or mercurial soap should be given every day after a bath of 35° C., for five or six weeks, omitting the inunction every seventh day. After five or six weeks iodides may be administered. During the employment of mercury the mouth should be washed out with a saturated solution of chlorate of potassium, seven or eight times daily, and the teeth should be carefully brushed. The treatment should be repeated at least once every three years for ten or fifteen years. His treatment for tabes consists of douches, electrization of the spinal cord, medulla oblongata, and urogenital apparatus; applications of Paquelin cautery along the spine, etc. He thinks he has obtained much benefit in this way in the cases under his care.

We welcome most gladly any suggestions which will enable us to modify in any degree the sufferings of the tabetic patient, but we can-

¹ *Monatsschrift für Psychiatrie und Neurologie*, 1899, vol. vi., No. 4, p. 257.

² *Ibid.*, vol. v., p. 440.

not help doubting whether much benefit can be obtained by attempts to electrize the central nervous system or by the application of the Paquelin cautery. We cannot doubt that Tschiriew's tabetic patients were much benefited, but we may ask whether the improvement was not due to a change in the general health of the patient; to local stimulation of muscles; to removal of pain; and possibly to some extent to the suggestion given the patient by such vigorous treatment.

Rigidity of the Spinal Column. Different diseases seem to have been grouped under "rigidity of the vertebral column." In a case described by A. Hoffmann¹ the spinal rigidity was believed to be due to the toxins produced by an extensive acne eruption. The case is especially noteworthy, inasmuch as complete restoration of function was obtained by treatment directed toward the cure of the acne eruption by warm and sand baths, by antirheumatic remedies, etc.

Von Bechterew² makes a distinction between the disease described by him as "rigidity of the vertebral column, with kyphosis" and the form of Strümpell and Marie, called by the latter "spondylose rhizomélique." Ossification of the large joints of the extremities, the ascending progress of the disease, rheumatic etiology, unimportant kyphosis, and unimportant root symptoms are among the features of the form of Strümpell and Marie, and distinguish it from the form of v. Bechterew. The latter reports two cases like those of Strümpell and Marie, and one case illustrative of the disease described by himself.

Kyphosis of the upper thoracic and lower cervical vertebræ, without prominence of individual vertebræ and without compensatory lordosis, half-flexed and prominent knees when the patient was in the standing position, sensitiveness of parts of the spinal column on percussion, almost complete immovability of the spinal column in backward and lateral movements, breathing almost entirely of the abdominal type, atrophy of muscles about the scapula and in the upper extremities, exaggerated tendon reflexes of the lower limbs, were the chief features of the case.

Von Bechterew has obtained a necropsy in one of his former cases and in this found ankylosis of the upper thoracic vertebræ, degeneration of the spinal roots, especially of the posterior, in the lower cervical and upper thoracic regions (the roots lower in the cord were also degenerated to some extent), degeneration of the white columns of the cord and thickening of the pia over the posterior part of the cord in the cervical region. The primary lesion was believed to be a chronic meningitis, and by means of this and the adhesion of the dura to the spinal ganglia the degeneration of the posterior roots was supposed to have been pro-

¹ Deutsche Zeitschrift für Nervenheilkunde, vol. xv., Nos. 1 and 2, p. 28.

² Ibid., pp. 37 and 45.

duced. Atrophy of the muscles supporting the spinal column resulted from this degeneration of the thoracic roots, and kyphosis and rigidity of the vertebral column followed. The degeneration of the posterior roots was not caused by narrowing of the intervertebral foramina and pressure upon the roots produced in this way.

The degeneration of the antero-lateral columns as a result of degeneration of the posterior roots is not very easily understood, and we shall wait with considerable interest to see whether the pathogenesis of the affection as given by v. Bechterew is generally accepted.

Sachs and Fränkel¹ report several cases of rigidity of the spinal column, and then ask whether the authors who have raised this discussion over spinal rigidity have really described anything new. Von Bechterew's form, they say, must be regarded as secondary, and if we once recognize secondary forms it will be impossible to say how many different types will deserve mention. We have spinal rigidity from syphilis, from injuries, from rheumatism, from chronic spinal-cord affections, etc. It is very true that scoliosis occurs in syringomyelia and in Dejerine's disease, known as interstitial hypertrophic and progressive neuritis of childhood, and probably in some other spinal affections; but the manner in which the scoliosis is produced we do not know. However, does the rigidity of the spinal column, such as that described by v. Bechterew or Strümpell and Marie, occur from spinal-cord diseases? The only evidence we have of this is v. Bechterew's case, and I for my part have not been convinced that the rigidity in this case resulted from the disease of the posterior roots and posterior columns. Sachs and Fränkel say that the morbid changes causing "progressive ankylotic rigidity of the spine" differ in degree and location, but not in kind, from those found in articular rheumatism and arthritis deformans.

An interesting discussion was raised in the New York Neurological Society by the report of Sachs and Fränkel's cases. Dana expressed the belief that arthritis deformans may begin in the small joints and progress steadily, or may begin in the back and hips; and that cases of the Strümpell-Marie type were merely cases of arthritis deformans. He said he had a case in which only the hip-joints were affected and the spine had escaped.

Two cases of rigid spine occurring in women is an interesting observation made by Collins,² for the disease has seemed to be one to which the male sex is especially liable, which may perhaps be due to the different lives led by males and females. I cannot pass over Collins' remarks without calling attention to the findings in a necropsy of one of his patients. The brain and spinal cord appeared to be normal. The

¹ Journal of Nervous and Mental Disease, 1900, p. 1. ² Ibid., p. 52.

vertebral column was apparently made of one piece, this being due to calcification of the anterior spinal, of the posterior spinal, and the inter-spinal ligaments. The intervertebral disks were not thickened and the hip-joints were very slightly altered. The changes "were not inflammatory," and were not those of ordinary rheumatism. Collins' explanation of v. Bechterew's case is also interesting; he would explain the rigidity as a symptomatic stiff back, similar to that seen in cervical meningitis. It is a pity that Collins has not stated why he considers the calcification as not inflammatory in origin. Of course, calcification is not always inflammatory, but it has been regarded in some cases as a sign of chronic inflammation, and Peterson, in speaking of Collins' findings, said they were like those seen in many cases of arthritis deformans.

This whole subject is a most interesting one, and it is gratifying to see that clinicians and neuropathologists are not being led away by new names, and are weighing carefully the evidence in favor of the existence of a new disease of the spinal column. Virchow has recently raised his voice against the introduction of new names for diseases which are not distinct from well-recognized forms.

There can be no doubt that the introduction of new names calls attention to certain groups of symptoms and arouses interesting and valuable discussions; but it has the misfortune of making medicine more difficult of comprehension and of leading the practitioner to think that there are many diseases where possibly only one exists.

SPONDYLOSE RHIZOMÉLIQUE. Whether such sharp distinctions as v. Bechterew makes can be accepted can only be determined by future investigations. For my part, I believe more study will reveal the similarity, rather than the dissimilarity, of these vertebral affections. It is a mistake to unite diseases which are essentially different, but it is a still greater mistake to widely separate morbid processes that are closely allied to one another. Thus in spondylose rhizomélisque the small joints are said to escape, and yet Valentine¹ reports a case in which they did not, but he does not regard this as any less truly a case of spondylose rhizomélisque, although he also distinctly separates this disease from the others mentioned above. A new symptom-group often stands out in bold relief, but careful observation reveals the blending with other processes.

Dana² has written a paper on the subject of rigid spine, with the report of cases, but he does not think any new malady has been described by v. Bechterew, Strümpell, or Marie. He believes that rhizomyelic

¹ Deutsche Zeitschrift für Nervenheilkunde, vol. xv., Nos. 3 and 4, p. 239.

² Medical News, 1899, No. 25, p. 673.

spondylosis is a form of arthritis deformans, and essentially allied to that trouble in etiology, symptomatology, and progress; while v. Bechterew's cases suggest arthritis deformans or syphilitic meningitis.

An uncommon form of rigid spine is described by Achard and Clerc.¹ Their patient had rigidity only in the upper part of the vertebral column and in the shoulders. Very pronounced muscular atrophy of the upper part of the trunk and of the extremities was observed and "exceeded very much the limits of articular amyotrophy." I cannot refrain from asking what are the limits of articular muscular atrophy, as I have seen extreme atrophy attributed to articular disease, and it would be a serious mistake if one should receive the impression that articular muscular atrophy is never of an intense degree. The case reported by Achard and Clerc seems to show that rhizomyelic spondylosis may commence in the upper part of the spine and in the shoulder girdle.

Zenner's² three cases of rigid spine are the first reported in this country, although numerous instances have been recorded in foreign literature. Zenner thought that in two of his patients the trouble was primarily muscular. The pains were chiefly of the character of muscular rheumatism; joint symptoms were absent, and one patient thought he was taller in the morning when he arose than in the evening. Zenner believes, however, that bony ankylosis finally ensues, even though muscular contractions may be the primary condition.

SENILE KYPHOSIS, Senator³ says, involves the upper part of the vertebral column and not the middle and lower portions. Rigid spine is not a new disease; it has been recognized for many years under the name of arthritis deformans by surgeons and neurologists; but v. Bechterew has succeeded in attracting much attention to the subject. It was described by v. Leyden in 1875, and in many other works by different authors. According to Senator, Strümpell has gone too far in saying that the affection is painless, for pain is not rare in the beginning of the disease, although it may become unimportant as the malady progresses, and may disappear. Senator also thinks that the causes of the rigid spine may be the causes of some of the nervous symptoms, and that a neuritis or myelitis may be produced. He takes a view of the subject, which seems to be a very proper one, when he says that the distinctions based on the localization of the deformity and rigidity of the spine, or on the unequal involvement of the joints of the extremities, or on the presence or absence of nervous symptoms, are not of great importance.

¹ *Revue Neurologique*, February 15, 1900, No. 3, p. 137.

² *Journal of Nervous and Mental Disease*, 1899.

³ *Berl. klin. Wochenschrift*, November 20, 1899, p. 1025.

New types of rigidity of the spine are constantly appearing. Thus Müller,¹ for example, says that in all the cases that had been reported the rigidity was of gradual development, sometimes with and sometimes without pain, and he reports a case which began quite suddenly with severe pain in the entire vertebral column. Trauma and cold seem to have been the causes in some cases, and Müller also refers to the case published by v. Bechterew, in which changes in the spinal membranes and spinal cord were regarded as primary and spinal rigidity as secondary and produced by muscular atrophy and trophic disturbance. Several cases are reported by Müller, and the list of clinical cases is now growing long since the attention of the medical world has been directed to the subject.

In the same journal with Müller's cases are some by Kirchgaesser.² It will soon be regarded as undesirable to increase the literature by the reports of clinical cases of rigid spine unless they teach a special lesson. A form of rigidity of the muscles of the back may closely simulate the rigidity of the spinal column.

Poliomyelitis. Examination in acute cases of anterior poliomyelitis has shown that the disease is truly inflammatory, and that the process is not confined to the anterior horns, as the posterior horns may be invaded, though to a less extent, and the white matter is not always intact. Inflammation of the portion of the central nervous system above the spinal cord has also been seen. Bülow-Hansen and Harbitz³ report two cases of anterior poliomyelitis in which inflammation was found throughout the gray matter of the spinal cord, most marked in the distribution of the anterior spinal artery. The evidence in favor of an infectious origin of anterior poliomyelitis is very strong.

Experiments have been performed for the purpose of determining the pathology of the disease, but usually the lesions produced have not been exactly similar to those found in cases of acute spinal paralysis—the so-called anterior poliomyelitis. As a rule, subcutaneous injections have been employed, and the result has been usually a parenchymatous degeneration, not a true inflammation. Hoche⁴ has undertaken experiments on a new line, and these have yielded valuable results. The vascular distribution of the spinal cord of the dog is sufficiently like that of man to make these experiments of value in the pathology of man. Hoche was unable to produce myelitis by embolism in the employment of Fränkel's pneumococcus, the staphylococcus pyogenes

¹ Münch. med. Wochenschrift, October 10, 1899, No. 41, 1335, and October 17, 1899, No. 42, p. 1377.

² Ibid., No. 41, p. 1332.

³ Ziegler's Beiträge, vol. xxv., No. 3, p. 517.

⁴ Archiv für Psychiatrie, vol. xxxii., No. 2, p. 641

aureus or the bacterium coli commune, unless he first caused embolism of the spinal cord by means of some powder, and in this way created a *locus minoris resistantiæ* within the cord. Even with this modification he was unable to produce myelitis with the pneumococcus, but with the staphylococcus and the bacterium coli commune myelitic foci were produced about the emboli. He found that after eight days all micro-organisms might disappear from the cord, and in this we probably have an explanation for the fact that micro-organisms have never been detected within the human spinal cord at necropsy, even in acute anterior poliomyelitis. In some of Hoche's cases the myelitic foci were limited to the embolic areas; in others the primary seats of infection were the source of a general infection of the spinal cord. Hemorrhagic inflammation, chiefly of the gray matter and originating in foci of inflammation within the lumbar region, was found as high as the cervical cord. The central canal, which in dogs usually remains patulous, seemed to be the means of conveyance of the inflammatory materials. Hoche thinks that in man trauma or "taking cold" may lower the vitality of the spinal tissues and render them susceptible to the micro-organisms in a manner similar to that produced by embolism. In the human adult the central canal does not usually remain patulous, but in children it is open and may serve as a means of conduction of the inflammatory material.

These experiments of Hoche are exceedingly valuable, as anterior poliomyelitis is much more common in children than in adults, and an open central canal may possibly be one cause of this. The disease is more common in the warm months, and occurs after various infectious processes. It is not unlikely that the gastro-intestinal disturbances of summer and the exhaustion of a severe illness render the spinal cord more liable to invasion by bacteria.

I must refer to an interesting case of acute poliomyelitis reported by Dercum,¹ in which the cerebro-spinal fluid obtained by lumbar puncture and examined by Coplin contained a diplococcus resembling the diplococcus of Sternberg. I believe that this is only the second time that bacteria have been found in the fluid obtained by lumbar puncture in cases of anterior poliomyelitis.

BULBAR POLIOMYELITIS is a form of infantile paralysis that does not seem to occur often, or at least it is not often observed. A case of this kind was reported recently by Oppenheim.² An attack of convulsions and unconsciousness in early childhood, lasting several days, was followed by paralysis of the left facial and hypoglossal nerves. In

¹ Journal of Nervous and Mental Disease, February, 1900, p. 116.

² Berliner klin. Wochenschrift, November 19, 1899, p. 405.

an examination made eighteen years later the muscles innervated by the left facial and hypoglossal nerves were found partially paralyzed and atrophied; fibrillary tremors existed, and the electrical irritability in the left facial distribution was quantitatively diminished. One does not care to call in question a diagnosis made by so careful an observer as Oppenheim unless he has the best of reasons for so doing, and in the present instance such reasons do not exist. Oppenheim excludes the possibility of a "fragmentary hemiplegia"—*i. e.*, of a hemiplegia which has almost entirely disappeared. It would indeed be a remarkable case in which those nerves remained paralyzed which usually regain their function early, while paralysis of the limbs disappeared. The facial atrophy, fibrillary tremor, quantitative diminution of the electrical response, and the exaggeration of the knee-jerk on the side opposite to that affected in the face were employed by Oppenheim in excluding a lesion within the cerebrum, either in the cortex or internal capsule. It seems to me, however, that muscular atrophy and quantitative diminution of the electrical reactions do not exclude the possibility of a "fragmentary hemiplegia." Muscular atrophy is observed in hemiplegia, and where the atrophy is found we may expect quantitative change in the electrical reactions. Fibrillary tremors are of more value in the diagnosis, and still more valuable is the exaggerated knee-jerk on the side opposite to the facial paralysis.

Other interesting features were noted by Oppenheim in this case: the restoration of power in those muscles on the paralyzed side of the face which have the most important function (*orbicularis palpebrarum*, *orbicularis oris*), and the contractions obtained in the facial muscles near the median line, on the paralyzed side, by a current applied on the sound side—by a current which caused no distinct contractions in the muscles of the sound side when applied to the sound side, and none in the paralyzed muscles when applied to the paralyzed side of the face. Oppenheim believed that the facial muscles in this case near the median line were innervated from the facial nerve of the opposite side. It seemed possible that even though such an innervation does not normally exist, motor fibres might grow over into the paralyzed side from the normal side when the paralysis occurred early in life. It is a well-recognized fact that restoration of function is more perfect after a lesion occurring in early childhood than it is after one occurring in adult age.

Acute Myelitis. Oppenheim thought that acute myelitis was a rare disease, but Hochhaus¹ thinks that four cases, with necropsy, observed by him within two years indicate that the affection is more common than we have believed. His cases presented quite a typical clinical

¹ Deutsche Zeitschrift für Nervenheilkunde, vol. xv., Nos. 5 and 6, p. 395.

course; one, however, was remarkable in that the commencement was almost apoplectiform. The mother found the child, who had been perfectly healthy a short time before, unconscious, and paralysis of the lower limbs and the right arm was observed within a short time. This reminds us of the acute beginning of paralysis in spinal syphilis. I saw a patient with the latter disease who had gone on top of an omnibus, and when he attempted to descend he found he was very weak in the lower limbs. Hochhaus observed perivascular cellular infiltration, hyperæmia, small hemorrhages, etc., in his cases of acute myelitis. It seems strange that the gray matter escaped to a remarkable degree except in one case.

Vertebral Caries. The frequency of vertebral caries makes the disease of great interest to physicians and surgeons alike, and Fickler's¹ clinical and histological study of twenty cases (nineteen with necropsy) is of much value. We have known for a long time many of the facts which he presents, but it is well to have them confirmed by the study of so extensive a series. Vertebral caries is usually secondary, and the primary seat is usually in the lungs, although it may be in the lymph glands and more rarely in other organs. We know that trauma seems to have some effect in the development of the disease in those predisposed to tuberculosis, but it is not so generally known, however, that the disease is more frequent after middle life; indeed, one feels much inclined to doubt the correctness of this statement. We know also that the first symptoms are usually due to involvement of the sensory roots at the level of the affected vertebræ, and that spinal rigidity is common. I have had under my care recently a patient with rigidity, pain, and a sensation of constriction about the neck, and the diagnosis in this case was tumor or caries of the upper cervical vertebræ. The necropsy showed that the case was one of spinal tumor, but caries had to be carefully considered. It is well to remember that pain on pressure along the spine may be absent in about half the cases. We know also that the first symptoms of compression of the spinal cord are usually those resulting from involvement of the motor tracts—fatigue, ataxia, and paresis; constipation is also an early symptom. Paraplegia may develop suddenly from rupture of a tuberculous abscess into the spinal canal or from the giving way of vertebræ. The weak point in Fickler's paper is the absence of reports of results from surgical operations in cases of Pott's disease. Many oppose surgical intervention, and a careful summary of all the reported cases of vertebral caries in which surgery has been employed would be most valuable.

I cannot repeat all of Fickler's histological findings, as they are of

¹ *Deutsche Zeitschrift für Nervenheilkunde*, vol. xvi., Nos. 1 and 2, p. 1.

interest chiefly to the neuropathologist. He observed nerve fibres within the cord, which he believed were newly formed, and from this finding he concludes that the nerve fibres of the spinal cord are capable of regeneration, with complete restoration of function, provided the vascular system is intact. The recovery of function after spinal compression, Fickler believes, depends upon the restoration of the normal lymph circulation, upon the formation of medullary sheaths about persisting axis-cylinders, and upon the regeneration of nerve fibres. We cannot, of course, dispute the existence of the nerve fibres described by Fickler, but we may properly be a little cautious in accepting these as regenerated fibres within the spinal cord and as proof that restoration of function occurs in this way. No subject has been more disputed than that of the regeneration of nerve fibres within the central nervous system, and the weight of evidence is against the possibility of such a fact. We will wait before we accept Fickler's interpretation of these fibres, although we must confess we cannot explain their presence.

Goldscheider¹ thinks that the diagnosis of Pott's disease is much easier in the child than in the adult, because in the former kyphosis is common, while in the adult deformity is frequently absent, and the vertebral disease can only be told by tenderness on pressure over the spine. This tenderness may be absent, and even if present it does not always indicate the existence of diseased vertebræ. Inasmuch as the diagnosis of compression paralysis in the adult is sometimes difficult, Goldscheider employs extension in every doubtful case exhibiting symptoms of spinal compression. The prognosis is better when the disease occurs in the young than when it occurs in those of adult life, and he emphasizes the fact that this extension must be prolonged, and should not be discontinued simply because no benefit has been obtained within several months. I might mention here that improvement from extension in a case with signs of compression does not prove that Pott's disease is the cause of the symptoms, as I have seen the symptoms of intradural spinal tumor diminished in intensity under this treatment.

Goldscheider mentions a fact of very great importance, viz., that complete paraplegia of long duration may be much benefited by extension. It is wonderful how much pressure the spinal cord may endure; yet restoration of power, partial or complete, in the limbs may occur, though the paralysis may have existed for months. Goldscheider observed a case that illustrated the truth of this statement. In his case paraplegia so complete that the legs and feet could not be moved had existed for fourteen months before extension was tried, and rigidity had been present for half a year, and yet this patient regained the power

¹ Deutsche med. Wochenschrift, April 26, 1900, p. 272.

of walking. In addition to extension, movements of the limbs were attempted while the patient was kept in a warm bath for about an hour at a time. This is a method that has been recommended by Leyden and Goldscheider for cases not very acute, and seems to be very serviceable. It depends on the fact that the movement of the limbs under water is easier than when the limbs are exposed to the air. Swimming is easier in salt water than in fresh, and it might be advisable in employing this treatment to use salt water.

He also mentions that even when the power of locomotion in the lower limbs has been restored in a case of spinal compression, ankle-clonus is always persistent; and this persistence of ankle-clonus seems to me to indicate that although function has been regained, the spinal cord has suffered organic change.

Another statement of Goldscheider's is worthy of note: Increase in the paralysis while extension is being applied, he says, does not necessarily mean that the treatment is injurious. The increase in the compression may occur at the same time that the extension is instituted, and yet considerable improvement may be observed later.

Systemic Disease of the Spinal Cord. Combined systemic disease, first well recognized by Kahler and Pick in 1878, has been studied by many investigators, and quite a number of necropsies have been obtained. Combined systemic disease is not *tabes dorsalis*, in which involvement of the lateral columns occurs. The symptoms point often to primary involvement of the pyramidal tracts, and the degeneration of both posterior and lateral columns differs from that seen in *tabes* with later involvement of the motor tracts. The disease is referred to further on under the spinal changes caused by *anæmia*.

Lateral Sclerosis. The existence of isolated primary degeneration of the pyramidal tracts has been disputed, and only about four or five necropsies show the possibility of this degeneration. "Lateral sclerosis" is a disease founded on clinical symptoms, and it is very surprising that this disease is so frequently diagnosticated when its occurrence, as shown by necropsy, is so rare. By "lateral sclerosis" the clinicians mean primary isolated degeneration of the pyramidal tracts. A degeneration of this system causes spastic paraplegia, sometimes with involvement of the upper limbs, though to a less extent; but these symptoms are produced by a variety of lesions. I cannot understand the feeling of assurance with which some clinicians diagnosticate "lateral sclerosis" without the least hesitation. Friedmann¹ has reported what seems to be an instance of this disease. The symptoms began with weak and spastic gait; the vesical functions were not affected and the cranial nerves

¹ *Deutsche Zeitschrift für Nervenheilkunde*, vol. xvi., Nos. 1 and 2, p. 140.

were not diseased; the patellar reflex was much exaggerated, and foot-clonus was present; later hemiplegia developed. The crossed pyramidal tracts were degenerated from the lumbar region to the middle of the pons. In the lower thoracic region the direct cerebellar tracts were affected. The cells of the anterior horn of the cervical and upper thoracic region on the side of the hemiplegia were moderately diseased, but this degeneration was believed to be a result of the hemiplegia, as the anterior horn cells of the opposite side were normal. This degeneration was believed to be due to syphilis, because no cause could be detected for the endarteritis which was found. It seems to me that the syphilitic nature of this degeneration has not been proven. Endarteritis may result from many causes, and the failure to detect the cause is no proof that it is syphilis. The case, however, is one of value, but is not uncomplicated.

Another recent case of this character is reported by Ida Democh.¹ It was clinically one of spastic spinal paralysis, and primary degeneration of the central motor tracts was found, and the motor cells in the anterior horns did not appear to be altered. It seemed as though a congenital tendency to degeneration of the motor system in combination with the alcoholism of the patient produced a primary change in the pyramidal tracts. The case, with necropsy, is a rare one, and in connection with a few others, shows that a skepticism that has forbidden the recognition of lateral sclerosis has gone too far. We should make a serious mistake, however, if in every case of simple spastic paraplegia without vertebral lesions we should jump to the conclusion that lateral sclerosis existed. Primary degeneration of the central motor tract without degeneration of the peripheral motor tract does occur, but it is very rare, and in the past twenty-five years not half a dozen thoroughly satisfactory cases are on record. This seems very strange, for the combination of primary degeneration of the central with degeneration of the peripheral motor tract, known as amyotrophic lateral sclerosis, is not so very uncommon. Even in the most typical cases of lateral sclerosis some slight complication has been found.

Spinal Changes in Carcinoma. Lubarsch, in 1897, described the changes he had found in the spinal cord in eleven of the nineteen cases of carcinoma of various parts of the body examined by him. In those cases in which carcinoma was believed to be the cause the spinal lesions were in disseminated foci. Meyer² now describes a case of carcinoma of the uterus in which a systemic degeneration was seen. The clinical phenomena were a spastic-parietic gait and exaggerated patellar reflex

¹ Archiv für Psychiatrie, vol. xxxiii., No. 1, p. 188.

² Deutsche Zeitschrift für Nervenheilkunde, vol. xvi., Nos. 5 and 6, p. 345.

and Achilles clonus on each side. There was no motor paresis when the patient was examined in bed, no ataxia, no disturbance of defecation or micturition, and sensation was normal. In the lumbar region only the crossed pyramidal tract was degenerated, but in the thoracic and cervical regions the adjacent part of the direct cerebellar tract was involved. The degeneration did not extend above the cervical swelling, and was most pronounced in the lumbar region, and decreased in intensity toward the cervical cord. It was not the so-called descending degeneration—*i. e.*, a degeneration resulting from focal injury of the motor tract—for the brain was intact, and no transverse lesion was found in the cord. The rest of the cord was normal.

This case is also exceedingly important as showing that primary degeneration of the pyramidal tract may occur. Meyer's case is unusually valuable because the cells of the anterior horns were not diseased. Is his case equally valuable as an evidence that carcinoma in any part of the body may produce systemic degeneration of the spinal cord? I fail to see this. He reports a case in which the first symptoms of carcinoma and of involvement of the pyramidal tracts were observed about the same time, and this is the only evidence he offers that one process was the result of the other. No other satisfactory cause could be found; but what of that? Has our knowledge of the etiology of nervous diseases advanced to such a degree that we know all the causes of any one affection? It certainly has not, and we are entirely ignorant of the origin of the degeneration of the pyramidal tract in amyotrophic lateral sclerosis, for example. It is not improbable that the carcinoma, acting through some unknown poison, produced degeneration of the pyramidal tract—it is not improbable, but it is not proven, and we will be wise if we simply remember Meyer's interesting case and wait for further evidence before we accept the statement that carcinoma of the uterus may cause primary degeneration of the pyramidal tract.

Spinal Tumor. The diagnosis of spinal tumor is not easy; but Sachs¹ has been so fortunate as to make a correct diagnosis of spinal growth in two recent cases, and has had operations performed with much relief to the patients. It will pay us to study the symptoms on which the diagnoses were based. In his first case persistent neuralgic pains and slight objective disturbance of sensation, although they had lasted nearly two years, were not sufficient for a diagnosis of spinal tumor. In addition there were spasmodic contractions of the thigh muscles and pain on pressure near the second lumbar vertebra exactly like the spontaneous pain of which the patient complained, and the site of this painful area tallied perfectly with the portion of the spinal axis

¹ Medical Record, January 6, 1900, p. 7.

to which the objective sensory symptoms were referred. The tumor was believed to be extradural, chiefly because the symptoms were unilateral. An alveolar sarcoma of the size of a small walnut was found adherent to the dura and the vertebrae, and was removed. A month after the operation the patient was free from pain and had full use of his limbs. An intradural spinal tumor may, however, produce unilateral symptoms, as I have recently observed in a case in which at necropsy I removed a growth of this character. The symptoms of an intradural spinal tumor probably become bilateral sooner than do those of an extradural spinal tumor.

In Sachs' second case the gradual onset of the symptoms, the rapid development of a lumbar deformity, the weakness of the lower extremities, the loss of the deep reflexes, and the unilateral character of the sensory changes indicated a lesion in the lowest portion of the spinal axis. The diagnosis of a malignant spinal tumor was made, although the possibility of Pott's disease was borne in mind. An operation showed that the diagnosis of tumor was correct, and the tumor—a fibrosarcoma—was removed.

I am heartily in sympathy with those who hold that operation is justifiable when the diagnosis of spinal tumor can be made with reasonable certainty and the symptoms are progressing. To do nothing, or perhaps worse than nothing, by administering drugs which impair digestion, while the patient is slowly and certainly sinking into the grave, seems to me entirely unjustifiable. Operations on the spinal cord are serious; but I had rather err in urging operation when the symptoms warrant it than err in being so conservative that the patient dies from compression of the cord by a new growth. I know of nothing more discomfoting to the physician than to observe at necropsy a tumor in the cord or brain which the surgeon should have been called in to remove. Let us be conservative by all means, but not so conservative that our patient dies as a result of our hesitation. A case that I have watched for many months, and in which a necropsy was obtained, has convinced me of the hopelessness of operating in some cases of spinal tumor. I found the cord embedded in a new growth which extended through the foramen magnum and along the base of the brain; in this case the surgeon could have accomplished little if he had attempted intervention. The nearer the spinal tumor is to the foramen magnum the more difficult is its removal.

The two cases of spinal tumor reported by Schultze¹ are encouraging in the results of the operations. Paralysis had existed in one case for seventeen months, and for thirteen and a half months the motor palsy

¹ *Deutsche Zeitschrift für Nervenheilkunde*, vol. xvi., Nos. 1 and 2, p. 114.

had been complete and the sensory disturbance great. A year after the removal of the tumor the patient was able to walk short distances without support. Five or six months after the removal of the tumor in the second case a motor spastic paralysis, which had previously existed, had almost disappeared. Bruns' statistics of twenty operated cases, with improvement or recovery in six cases, may be advantageously modified. Schultze also had a case of fibroma at the foramen magnum in which an operation was not performed. He does not recommend operation on tumors situated at this portion of the spinal column, but suggests the possibility of such operation. There were some interesting phenomena in this third case, such as the absence of pain and rigidity of the neck during a considerable period, the intense rigidity of the extremities, the high situation of the tumor, and the paræsthesia and disturbance of motion, first in the left lower limb from a tumor closing the right side of the foramen magnum. Schultze believes that in the upper cervical region the motor fibres for the lower limb are more peripheral than those for the upper, because the arm in his third case was not affected as soon as the leg. Flatau, he says, has shown that this is the arrangement of the fibres in the dog.

The diagnosis of spinal tumor is not always easy, and it is difficult to say whether an operation in a given case is desirable or not, and Schlesinger tells us in his excellent monograph on spinal neoplasms that the mere opening of the spinal canal may be fatal. We must wait for reports of tumors at the foramen magnum with surgical intervention before we can judge of the desirability of operation on growths in this region. The medulla oblongata is so vital a portion of the central nervous system that it may be easily injured, with fatal results, during an operation.

We depend to some extent on tenderness on pressure in diagnosing tumor of the vertebra, but this sign is not always present, and was not present in a case reported by Böttiger.¹ The symptoms, as given by him, pointed to the existence of compression myelitis, and carcinomatous softening of the fourth thoracic vertebra was found. This case was remarkable in several ways. A scirrhus carcinoma was removed from the breast in September, and symptoms of spinal compression commenced in October and increased until death occurred in the following December. Metastasis to the spinal column after removal of a malignant mammary tumor is always to be feared, and has been observed often enough to show us that the danger is not an imaginary one. Usually the metastasis does not occur so soon after removal as in this case. Notwithstanding the complete destruction of the body of a

¹ Vereins-Beilage der Deutschen med. Wochenschrift, July 6, 1899, p. 153.

vertebra, all external signs of vertebral disease were absent, even sensitiveness to pressure. In a case of this kind the exact location of the tumor would be very difficult to diagnosticate.

Lesions of the Cauda Equina. Cases of disease of the cauda equina with necropsy are quite infrequent, and the one reported by v. Bechterew¹ presents several unusual features. The paralysis of the lower limbs was extensive, but paralysis of the sphincters did not occur; on the other hand, paralysis of the detrusor vesicæ muscle and of the rectum was observed. The case resembles others with lesion of the cauda equina, in many of its details, and we need not dwell on most of the symptoms; one feature, however, conveys an important lesson to the neurologist and to the surgeon. The man first had a tumor of the testicle, which was removed, and following this he presented the signs of a metastatic growth in the lower part of the abdomen. The desire to have the painful scar of the scrotum excised induced the surgeon to resort to the apparently simple operation of removal, but the patient awoke from the anæsthesia paralyzed in the lower limbs. The necropsy, obtained some time later, showed that the tumor had invaded the vertebral column, and that during the narcosis a fracture of the weakened vertebræ occurred, possibly from an involuntary struggle on the part of the patient. It would be well to bear this case in mind when we are confronted by a similar one, and to remember that an abdominal tumor causing signs of spinal pressure may weaken the vertebræ and render them liable to fracture on comparatively slight exertion by the patient.

Disseminated Sclerosis. Disseminated sclerosis is a less frequent disease in this country than on the continent of Europe. The exact cause of this is not known, as we have the cases of poisoning by metals and of infection, supposed by Marie and Oppenheim to be causes of the disease, and yet we do not see in America anything like the number of cases of disseminated sclerosis that are found in the nervous clinics of Europe.

It is well for us to know that other conditions resemble disseminated sclerosis. This seems to be especially true of diffuse sclerosis—a sclerosis extending over the white matter of the cord, not appearing in foci, and not causing the destruction of tissue at any one point as seen in disseminated sclerosis. In the diffuse form we find a moderate proliferation of the supporting tissue, and this gives symptoms similar to those of disseminated sclerosis, but as pathological changes occur also in the brain, the disease may resemble paretic dementia, both clinically and histologically. The diagnosis between paretic dementia, diffuse sclerosis, and disseminated sclerosis may be exceedingly difficult.

¹ Deutsche Zeitschrift für Nervenheilkunde, vol. xv., Nos. 3 and 4, p. 222.

Multiple small foci of softening may produce a clinical picture like that of disseminated sclerosis, but more commonly it causes signs of bulbar involvement, and occurs in later life, as a rule; whereas disseminated sclerosis is more a disease of early life. Gerhardt¹ reports cases which exhibit the truth of these remarks.

SYPHILIS OF THE CENTRAL NERVOUS SYSTEM produces at times focal lesions which cause symptoms closely resembling those of disseminated sclerosis, and experienced neurologists may have much difficulty in making the correct diagnosis. Usually atypical symptoms lead the careful diagnostician to suspect the presence of syphilis, and in the case reported by Krewer² syphilitic infection was denied, but the patient was a woman, and it is usually more difficult to establish the existence of syphilis in females than in males. She had numerous scars in the skin, thickening of the periosteum of each tibia, and arterio-sclerosis—all of which signs suggested syphilis. The diagnosis of cerebral syphilis seemed to be the correct one in this case, but in addition to the symptoms permitting such a diagnosis were others suggesting disseminated sclerosis—nystagmus, scanning speech, intention tremor. The symptoms of the latter disease were not entirely typical, and, therefore, the diagnosis of cerebral syphilis associated with multiple sclerosis seemed incorrect. The case was probably one of syphilis of the brain and cord, and it shows how difficult it may be at times to exclude disseminated sclerosis in a case of nervous syphilis. Syphilis is not believed by most writers to be a cause of the disease known as multiple sclerosis.

Syringomyelia. Great œdema as a sign of syringomyelia does not seem to have been often observed, and the explanation for the occurrence of the phenomenon is not altogether easy. The cavity in the spinal cord often involves the intermediate gray matter between the anterior and posterior horns, and it may be that vasomotor nerve cells are located here; but this explanation does not enable us to understand the infrequency of œdema in syringomyelia. Gnesda³ reports a case of syringomyelia in which one upper limb was enormously swollen, and the œdema was in the area of disturbed sensation—a fact which seemed to point to a spinal origin of the swelling. Schlesinger has probably observed as many cases of syringomyelia as any living man—possibly more than any other man—and yet he has seen this œdema in syringomyelia in only one other case, and in that case it disappeared after a certain time. Schlesinger states in the discussion of Gnesda's case that syringomyelic arthropathies also may disappear spontaneously. Is this

¹ Deutsche Zeitschrift für Nervenheilkunde, vol. xv., Nos. 5 and 6, p. 458.

² Zeitschrift für klin. Medizin, 1899, vol. xxxvii., Nos. 3 and 4, p. 209.

³ Neurologisches Centralblatt, August 1, 1899, No. 15, p. 717.

syringomyelic œdema due to the same causes as the extensive œdema observed in a few cases of hemiplegia? We can ask the question, but, unfortunately, we cannot answer it, for we do not know the cause of the œdema in the latter.

An unusual form of syringomyelia is reported by Chauffard and Griffon.¹ They observed hypertrophy of the right upper limb with the syringomyelic disturbance of sensation in this part. The cases of this character, exclusive of the one just mentioned, seem to number only five, according to these writers (Charcot and Brissaud, Marie, Chantemesse, Schlesinger, Lunz).

MYELITIS OR SYRINGOMYELIA. In describing any symptom one can never be perfectly certain that his description is the first that has appeared in the literature. Marinesco, for example, believed that he was the first (1898) to mention the syringomyelic dissociation of sensation in transverse myelitis, and many voices have been raised in protest. It seems, according to Haskovec,² that Rosenthal deserves the honor of having first described (1875) this condition. Leaving aside the question of priority, the fact that the symptom which for a number of years was regarded as the most characteristic—indeed, pathognomonic—of syringomyelia may also occur in transverse myelitis is worthy of attention, as we have always the possibility before us that in myelitis areas of softening may cause cavity formation. This syringomyelic dissociation of sensation has been seen by Edsall in Pott's disease.

SENSORY DISTURBANCES IN SYRINGOMYELIA. The cerebral type of anæsthesia is either hemiplegic or monoplegic, and in the extremities the disturbance is greater in the distal portions, where it is defined by a circular line which is not always distinct. This form is seen especially in hysteria. The anæsthesia caused by disease of the spinal cord or posterior spinal roots is spoken of as segmental; but the name is an unfortunate one, because the cerebral form has also been described as segmental. In my digest of last year I suggested that it would be well to avoid the word "segmental," and speak of a cerebral type and a spinal type, including in the latter the anæsthesia caused by disease of the posterior roots. To be more exact, we might say the spinal radicular type. In this latter type the anæsthesia is in a circular area on the trunk, and is parallel to the long axes of the limbs in the extremities. Von Sölder³ concludes from recent investigations that a type similar to the spinal radicular may be found in the face. He studied clinically six cases of syringomyelia in which the sensation of the face was disturbed. This is quite a new field of investigation, and the results

¹ *Revue Neurologique*, May 15, 1899.

² *Ibid.*, 1899, p. 446.

³ *Jahrbücher für Psychiatrie und Neurologie*, xviii., No. 3, p. 458.

of clinical study will, of course, become more valuable when they are based on pathological findings. In this country, at least, six cases of syringomyelia with sensory facial disturbance would not be easily found.

Attempts to explain disturbance of sensation have never been perfectly successful, and we know much less about the central tracts for the conduction of sensory than about those for motor impulses. There are many different varieties of sensation, and alteration of one or more may occur with integrity of the others; this adds to the difficulty of interpretation. A recent observation of Dejerine¹ is especially interesting in view of the attempts which have been made to distinguish disturbance of sensation resulting from a lesion of the nerve roots from that following a lesion of the spinal cord. Dejerine observed a syringomyelic dissociation of sensation—*i. e.*, preservation of tactile sense, loss of pain and temperature sense—of the radicular type, involving the portions of the thorax innervated by the thoracic roots from the eighth to the second inclusive, and involving that portion of the upper extremity innervated by the first and second thoracic and the seventh and eighth cervical roots. This disturbance of sensation was attributed to the syringomyelic destruction of the right posterior horn found at the microscopical examination. This case reminds me forcibly of the one reported by Dercum and Spiller, in which the syringomyelic disturbance of sensation in an upper limb resulted from a cavity confined to the posterior horn; but the most interesting feature in Dejerine's case was absent in Dercum and Spiller's. The limitation of the sensory disturbance to the inner part of the upper limb resulted from a cavity in the posterior horn of the same side, not extending above the seventh cervical segment. Dejerine believed that this cavity was due to hæmatomyelia after vertebral fracture. His case proves that a lesion confined to the posterior horn may cause a disturbance of sensation as truly of the radicular type as that resulting from a lesion confined to the posterior roots, only in the former the syringomyelic dissociation of sensation is observed.

Landry's Paralysis. E. W. Taylor and J. E. Clark² have put in words the thoughts of many regarding Landry's paralysis. At most this "disease" is, and has always been, merely a group of symptoms. The etiology and at first the pathology were entirely unknown, and, indeed, negative findings were regarded as a part of the affection. We do not know the etiology of Landry's paralysis even at this day, but probably we shall not err if we accept the view that it is due to infection, and not always the same infection. The study of the pathological

¹ *Revue Neurologique*, July 15, 1899, No. 13, p. 518.

² *Journal of Nervous and Mental Disease*, April, 1900.

changes has shown that the lesions may be either in the spinal cord or peripheral nerves. If we had a better name we might drop the term Landry's paralysis, as Taylor and Clark propose; but even these writers do not give us a better one. The clinical picture of Landry's paralysis is quite striking; indeed, I know of no disease more impressive in its clinical manifestations. Quite recently I was asked to see a woman who, one evening, began to be weak in the lower limbs, and by the following morning was paralyzed in all the extremities. Sensation, electrical responses, and mentality were normal, but the tendon reflexes were absent, and micturition and defecation were not disturbed. Such a clinical picture as this is exceedingly striking, and I know of no better name than Landry's paralysis to describe it. I cannot see that the employment of the term causes confusion, as those who are familiar with the literature on the subject know that the clinical symptoms may be produced by different causes. We certainly cannot substitute a name descriptive of the pathological findings, because the findings are not always the same—not every case is poliomyelitis and not every case is neuritis. We cannot call the case acute ascending paralysis, because the paralysis is not always ascending. Grant that occasionally in cases due to neuritis some pain may be present, we still have numerous cases in which sensation is not disturbed, and for these we must have some descriptive term. Taylor and Clark have done something to clear away the uncertainty in the use of the name Landry's paralysis by showing the existence of this uncertainty and the exact conception we should have when we speak of Landry's paralysis, but they have given us no better name.

The three cases of Landry's paralysis reported by Knapp and Thomas¹ afford three different modes of termination of the disease—death, partial recovery, and complete recovery. In the case which terminated fatally degeneration of the nerve cells in the anterior horns of the spinal cord, degeneration of the anterior and posterior roots and of the peripheral nerves, and dilatation of the bloodvessels in and about the cord were found. Knapp and Thomas attempt to make some distinctions between the clinical picture of anterior poliomyelitis and Landry's paralysis. The former may begin, as may the latter, with signs of acute febrile disturbance; it affects many muscles at once, and is not progressive; the abdominal and respiratory muscles and those supplied by the cranial nerves are seldom affected, and the sphincters remain intact. Sensory disturbances, except some painful sensations, are lacking. For my part, I believe sharp distinctions between the two diseases are made with great difficulty and even uncertainty. The patient under my care, to

¹ *Journal of Nervous and Mental Disease*, February, 1900, p. 74.

whom I have referred a few lines above, had a history of infection through the uterus. This seemed to be a case of Landry's paralysis, but I believe the pathological condition was similar to that found by me in Dr. Sherman's case, and that the patient also had poliomyelitis.

There is no reason why the occurrence of atrophy and altered electrical reaction in cases which last a long time should surprise us. It would seem, with our knowledge of the lesions that have been found in Landry's paralysis, that the absence of these symptoms should cause more astonishment than their presence, but sufficient time must elapse for the development of such symptoms.

A case of Landry's paralysis has been studied by Courmont and Bonne.¹ The lesions were confined to the anterior horns, and the peripheral nerves were normal. The finding of a micro-organism of unknown character in the cerebro-spinal fluid is important, and helps to confirm the view, so extensively held, that Landry's paralysis is the result of infection.

Wappenschmitt² has made a careful summary of recent cases of Landry's paralysis, and reported one in which changes were found in the nerve cells of the spinal cord, but not in the peripheral nerves, although clinical symptoms of neuritis were present. The method of staining the fresh nerve fibres with osmic acid does not seem to have been employed, and I am inclined to believe that had it been used, and many nerve fibres studied in this way, more or less alteration of the peripheral nerves would have been detected. The cellular changes were not unlike those described by C. K. Mills and myself in a case of Landry's paralysis where we detected nerve alteration by the staining of fresh nerve fibres with osmic acid. This method, where it can be employed, I regard as even superior to the Marchi method for the study of alterations in nerves.

Spinal Hemorrhage. The subject of hemorrhage within the spinal canal has received careful consideration from Pearce Bailey,³ and in a recent paper he gives an excellent summary of our knowledge of this condition. Much that he says is well known, but his paper will be very useful, especially to those who have not made microscopical examinations in these cases. Hæmatomyelia seems to be a favorite topic with Bailey, and he has had considerable experience both in clinical and pathological investigations.

Hæmatomyelia is a rare condition without fracture of the vertebræ, but it has been observed a number of times, and a case of this kind, with necropsy, has recently been reported by Lloyd.⁴ A woman fell

¹ Archives de Neurologie, November, 1899, p. 353.

² Deutsche Zeitschrift für Nervenheilkunde, vol. xvi., Nos. 3 and 4, p. 306.

³ Medical Record, April 7, 1900, p. 573.

⁴ Journal of Nervous and Mental Disease, February, 1900, p. 92.

down stairs, and became paralyzed from the neck down, and the cause of the symptoms was found to be hemorrhage and necrosis of the tissue in the anterior part of the posterior columns in the upper cervical region. One lateral column was also partly affected. It is unusual for the gray matter of the spinal cord to escape to the extent that was observed in this case. The gray matter is looser in structure and richer in vessels than the white, and therefore hemorrhage, if it occurs at all, is more liable to be most extensive in the gray matter.

Lumbar puncture sometimes may be serious in its results. Henneberg¹ was able to present to the Berlin Society for Psychiatry and Nervous Diseases two spinal cords in which lumbar puncture had caused hemorrhage into the cauda equina. The lesion, of course, is a rare one, but cases show that the nerve fibres and vessels are not always pushed aside by the point of the needle.

Changes in the Spinal Cord in Anæmia. The spinal cord has been examined in many cases of severe anæmia, and the findings have differed considerably. In some cases foci of degeneration have been found, in other cases systemic degeneration. Jacob and Moxter² have studied the spinal cord in six cases of severe anæmia, and in none of these did they find alteration of the gray matter sufficient to explain the changes in the white matter. The ganglion cells of the cord were intact. Multiple foci of degeneration were found in all cases. With the exception of one case, the foci were more numerous and older in the cervical region. Systemic degeneration was really secondary degeneration from foci situated in the cord, or was only apparently systemic, and was really the result of confluence of numerous sclerotic foci. Vascular changes were found in normal as well as diseased portions of the spinal cord, and in some foci normal vessels were seen. It was positive, therefore, that the pathological changes in the vessels were not the cause of the changes in the white matter, but that both processes were the result of a common cause. The explanation for the greater involvement of the posterior columns cannot be given, but the observations of Jacob and Moxter show that the disease almost invariably begins in the formation of perivascular and periseptal foci.

It has been believed by some that some toxic condition of the blood causes the alteration of the nervous tissue found in grave anæmia and profound cachexia. Vascular disease may cause lesions resembling those occurring in severe anæmia. In a case reported by Henneberg³ weakness of the lower limbs was followed by weakness and awkwardness of the upper limbs, loss of the patellar reflexes, quantitative and

¹ Centralblatt für Nervenheilkunde und Psychiatrie, January 24, 1900, p. 8.

² Archiv für Psychiatrie, vol. xxxii., No. 1, p. 169.

³ Ibid., No. 2, p. 550.

qualitative changes in the electrical reactions in the lower limbs, mental failure, incontinence of urine, etc. No ocular signs were detected. Another case with rather an imperfect clinical history is reported. In both these cases degeneration, occurring in disseminated foci and also within the area of certain tracts, was found. The lesions in the first case were regarded as positively of vascular origin. The apparent tract degeneration seemed to be the result of the confluence of foci of degenerated tissue and of the secondary degeneration resulting from this focal change. The relation of the lesions to vascular disease was not so evident in the second case, as this patient had nephritis.

Two important lessons are to be learned from such cases as these: the first is, that degenerative focal changes may occur in the spinal cord when the vessels supplying the cord become sclerotic. The second is, that in rare cases nephritis, even in a young person, may produce spinal lesions by means of vascular degeneration. We see symptoms in the aged suggesting spinal disease, and in many cases the cause of these symptoms is probably the formation of an increased amount of neuroglial tissue about the vessels of the cord and destruction of nerve fibres. The relation of nephritis to spinal maladies is a subject that has attracted quite a good deal of attention. Some teach that a toxic change occurs, but the theory of vascular alteration as the cause of the spinal lesions appeals more to others.

Friedreich's Ataxia. The knee-jerk is usually lost in Friedreich's ataxia, but in rare cases it may be preserved, and in one of two cases of this disease occurring in brothers, Gladstone¹ found ankle clonus on the left side and retention of knee-jerks. This patient had deformities of the back and feet, ataxia, disturbance of speech, and nystagmus, and with the exception of the exaggerated reflexes is said to have presented a most characteristic picture of Friedreich's ataxia. There was no necropsy in either of these cases, which of course lessens their value. We do not know whether some lesion of the cerebellum may not have existed and caused the exaggerated reflexes. We are still disputing the relation of cerebellar atrophy to Friedreich's disease, and it is quite possible that the characteristic changes of Friedreich's disease in the spinal cord, associated with cerebellar sclerosis and atrophy, may cause the clinical appearances of Friedreich's ataxia, excepting the condition of the reflexes.

Brown-Sequard Paralysis. The Brown-Séquard paralysis has been thought to be an evidence that some of the sensory fibres decussate immediately on entering the cord, but in a case reported by Thomas and Long,² and later by Long² more at length, paralysis of motion and sen-

¹ Brain, Winter, 1899, p. 615.

² Contribution à l'étude des scléroses de la moëlle épinière, Kündig et Fils, Geneva.

sation existed in the same lower limb. This, in connection with some other cases, seems to show that we have no adequate explanation of the Brown-Séquard paralysis, viz., paralysis of motion and of so-called muscular sense on one side of the body and of temperature and pain sense on the other side. Long believes that a spinal lesion involving the gray matter is more likely to cause persistent disturbance of sensation than is one confined to the white matter. In the microscopical examination of this case sclerotic foci were found in the spinal cord, and were supposed to represent two different diseases occurring in the same person, viz., multiple sclerosis and spinal syphilis. Secondary degeneration was caused by one of these foci, but not by the others. These findings are of very great interest in regard to the question of the connection between syphilis and disseminated sclerosis, and I am inclined to think that some who read this report will look upon these lesions as the results of syphilis, in which case it becomes almost impossible to distinguish between the destructive changes of disseminated sclerosis and certain forms of spinal syphilis. It seems strange that syphilis is not regarded as an etiological factor in multiple sclerosis when so many other causes have been sought in explanation of the disease. Secondary degeneration has been reported in disseminated sclerosis, although the occurrence of this is very exceptional.

DISEASES OF THE PERIPHERAL NERVES AND MUSCLES.

Neuritis. Dejerine and Sottas described in 1893 a form of neuritis unrecognized until that time. They called this the "interstitial hypertrophic progressive neuritis of childhood." Later Dejerine published a monograph on the subject (1896). The chief features of this rare disease are ataxia of the limbs, with muscular atrophy and fibrillary contractions; disorder of cutaneous sensation and fulgurant pains; myosis and an Argyll-Robertson pupil; kyphoscoliosis, and especially hypertrophy and hardness of the nerve trunks detectable in the living subject. The clinical picture is a striking one, as the patient presents many of the signs of tabes dorsalis with certain others not pertaining to this disease—kyphoscoliosis and hypertrophy of the nerves. The microscopical examination has shown that in this disease there is degeneration of the posterior columns and posterior roots, with interstitial neuritis of the nerves of the extremities. The cases reported by Dejerine, and one earlier by Gombault and Mallet, which probably belongs here, are the only ones on record, and to this small list Rossolimo¹ adds another. Rossolimo observed transitory paralysis of the external rectus—a sign which was

¹ *Revue Neurologique*, August 15, 1899, No. 16, p. 558.

not present in any of the cases described by Dejerine. Paralysis of an ocular muscle is by no means unknown in polyneuritis, and, therefore, we need hardly be surprised that it should occur in the interstitial form. Exacerbations in Rossolimo's case were also interesting features, and show the relation of the interstitial neuritis of Dejerine to other forms of neuritis.

It seems to be firmly established in the minds of certain physicians that the patellar reflex and other tendon reflexes are lost in polyneuritis, although others do not accept this teaching unconditionally. The case reported by Werner¹ shows that exaggerated reflexes may exist in polyneuritis. Worthy of note are his statements that numerous cases of neuritis have been attributed to syphilis—and from the context he is evidently referring to *polyneuritis*—and that Leyden's polyneuritis mercurialis is not accepted by all writers. An important discussion as to the existence of syphilitic polyneuritis was held at the meeting of the American Neurological Association in 1898, and it was the opinion of most of those who took part that it is not a well-established disease. In regard to the other question, we shall hope that mercurial polyneuritis may not have to be recognized as long as we are compelled to prescribe mercury so frequently for syphilis. Werner shows by a microscopical examination that in his case of polyneuritis in which the tendon reflexes were exaggerated the nerves were partially degenerated and the central nervous system was not diseased; his statements, however, were not based on the findings by Nissl's method. His case seems to prove what he claims for it, viz., that peripheral neuritis without pathological findings in the central nervous system may exist with exaggerated reflexes, but the case does not explain how such exaggeration is produced. We cannot seek the explanation in the theory that the nerves which controlled the exaggerated reflexes escaped degeneration. Such a view could not be maintained in the light of the pathological findings.

Werner makes an observation which must be of interest to all students of neuropathology. Nerves stained in the fresh state with osmic acid and examined showed much more degeneration than those that were studied after they had been hardened. I have noticed this difference also, and in a case of Landry's paralysis studied with C. K. Mills, attention was called to this important fact. No nerve can be said to be absolutely normal unless such a statement is based on the condition of the nerve after it has been "teased" and placed in the fresh state in osmic acid.

Pressure Palsy. Paralysis from compression of the musculospiral nerve is very common and usually results from pressure of the head upon the arm. Dejerine and Bernheim² have had the opportunity to

¹ Münch. med. Wochenschrift, August 29, 1899, No. 35, p. 1146.

² Revue Neurologique, 1899, No. 21, p. 785.

make a microscopical examination of the nerve in a case of this kind, but they were unable to find any lesions which would explain the symptoms. This pressure palsy is peculiar in that the faradic and galvanic electric excitability of the nerve is normal when the electrode is applied below the point of compression, but when it is applied above the point of compression the current cannot pass over the compressed portion so as to cause contraction. The musculospiral nerve may be compressed near its entrance into the groove of the humerus, as when the arm is laid upon the back of the chair and the head is laid upon the arm; or it may be compressed near its exit from the groove, as when the arm is supported on a flat surface and the patient's head presses upon the nerve at the point where it winds around the outer edge of the humerus. I have seen pressure palsy of the musculospiral nerve in which the supinator longus and extensor carpi radialis longior were not affected. These muscles, with the anconeus, are supplied by branches from the musculospiral, while the remaining muscles of the radial and posterior brachial regions are supplied by the posterior interosseous nerve. It is evident that the musculospiral nerve may be compressed below the point of exit of the branches to the supinator longus and the extensor carpi radialis longior. In the report of the case by Dejerine and Bernheim emphasis is laid on the fact that in musculospiral palsy from pressure the nerve cannot transmit voluntary impulses and electric irritation through the point of compression, but preserves its trophic conductibility, as the muscles do not atrophy and the electric reaction below the point of compression is normal.

Unilateral musculospiral palsy is so often the result of pressure from an external object—often the patient's own head—that the physician thinks of this cause whenever he sees a case of unilateral wrist-drop. Occasionally the condition is the result of some other cause, as it was in a case reported by Bernhardt,¹ in which it was produced by the sudden arrest of a forward movement of the arm. The method by which this paralysis is produced has been shown by experiment. When the triceps has been violently contracted by the electrical current shortly after death a piece of wax substituted for the musculospiral nerve has been found flattened by the pressure exerted by the muscle on the humerus. In reading the report of these cases in the German literature we must remember that the musculospiral nerve is spoken of as the radial.

Ischæmic Paralysis. Occasionally after fracture of an upper limb the part is bound firmly with splints, and the splints are not removed for some time, and when they are finally removed the limb is found to be par-

¹ Centralblatt für Nervenheilkunde und Psychiatrie, June, 1899, p. 327.

alyzed and contractured. This condition is described by Page¹ as Volkmann's ischæmic paralysis. Most surgeons, and probably most neurologists, would seek an explanation for this condition in neuritis; but Page, depending largely on Volkmann's writings, thinks it is due to the combined influences of pressure, fixation, and ischæmia. The muscles, and not the nerves, are chiefly affected, although the nerves may be involved to some extent. The condition has been described as "a reproach to surgery, since a careful observation of the hand and fingers during the use of the splints will always give due warning of the danger." Page had a case in which this contracture had occurred, and he obtained very gratifying results by tendon-lengthening—an operation first recommended by Anderson in England and Keen in America. The occurrence of such a serious complication of fracture should be most carefully avoided.

Traumatic Neuritis. A trauma to a peripheral nerve may apparently be unimportant at the time of injury, but the nerve may be left in a weakened state and years afterward become paralyzed from a trivial cause. Thus Weber² reports two cases of ulnar paralysis, in one of which an affection of the elbow-joint preceded the paralysis twenty-seven years, and in the other thirty-three years. The occupation of one patient was the washing of the walls of houses—a labor which demanded considerable use of the arm; and this, in connection with chronic alcoholism, was believed to play an important part in the production of the paralysis. Sewing and washing and migraine were believed to be the causes in the other case. The migraine does not seem to have had a very positive relation to the ulnar paralysis, even if we believe that it indicated a neurotic disposition.

If we made careful investigations in the many obscure cases of nerve paralysis we should probably often find that an old trauma was the cause of the palsy. In one case of trifacial neuritis I was able to obtain the history of fracture of the lower jaw and the development of the neuritis of the fifth nerve some time later after an attack of diphtheria. In this case the inferior dental nerve had doubtless been injured, and the diphtheritic poison seemed to affect the nerve having the least resisting power.

OBSTETRICAL PARALYSIS. The occurrence of paralysis of the lower limbs after childbirth is a most unpleasant complication, and, fortunately, a rare one. Weir Mitchell, many years ago, reported two cases of this kind, and explained them as the result of traumatism. Other similar cases have been published. The traumatic origin of these palsies has been questioned, and they have been compared with the similar condi-

¹ *Lancet*, January 13, 1900, p. 83.

² *Deutsche Zeitschrift für Nervenheilkunde*, vol. xv., Nos. 3 and 4, p. 181.

tion occurring in the puerperium as a result of infection; they have been believed, therefore, to be the manifestations of polyneuritis. Ballet and Bernard¹ have observed a case in which a traumatic etiology could be regarded as positive on account of the distribution of the palsy, the absence of all infection before or after the labor, and the development of the paralysis immediately after the traumatism—some minutes after the last application of the forceps. They believe that obstetrical paralysis may result from infectious or toxic polyneuritis—the possibility of which no one now disputes—or from traumatism causing compression of the nerves, or from traumatism as the indirect cause, and infection or intoxication as the direct cause, or from hysteria. I have had under treatment a woman who probably had neuritis following typhoid fever, and improved until a puerperium caused a return of the symptoms. These obstetrical and puerperal palsies are occasionally seen, but, fortunately, are relatively uncommon.

Sciatic Scoliosis. Scoliosis as a result of sciatica has been frequently seen and described. Sometimes the patient leans away from the affected nerve, sometimes he leans toward it, sometimes he can voluntarily change the scoliosis from one side to the other, and, finally, the form of scoliosis may change without any voluntary action on the part of the patient. Alternating scoliosis occurring in sciatica is not common, but has been observed by Erben, Remak, Higier, Fischer and Schönwald, Vulpius, Mayer, Eckardt, Fopp, Fornaca and recently by Kreeke.² The latter gives two photographs showing the scoliosis first on one side and then on the other. A number of theories have been offered to explain the condition. In some cases the scoliosis disappears when the patient sits or lies down. It seems strange that the attention of Americans has not been directed to any great extent to the scoliosis of sciatica.

It is to be hoped that the success achieved by J. Crocq³ in the employment of ichthyol internally for sciatica may be obtained by others, and that the remedy may prove to be the best for relief in this painful affection, as Crocq believes it to be. He gives six or eight capsules of 10 cgm. each per day, and employs an ichthyol ointment at the same time.

Facial Paralysis. The question as to the existence of congenital defect of the facial muscles is one of considerable interest. We have had no necropsy in any of these cases, and are, therefore, ignorant of the exact conditions existing. Whether the defect exists only in the muscles or also in the peripheral neurons, and which of the muscular and neural anomalies are the primary ones, are questions still awaiting

¹ *Revue Neurologique*, November 30, 1899, p. 816.

² *Münch. med. Wochenschrift*, 1900, No. 6, p. 188.

³ *Journal de Neurologie*, June 5, 1899, p. 221.

solution. Bernhardt¹ adds two new clinical cases of congenital defect, in both of which only certain of the muscles innervated by the facial nerve were parietic. It is well known that in facial paralysis of adults certain of the muscles supplied by the seventh nerve are less paralyzed or recover more rapidly than others, and Bernhardt especially has demonstrated this fact; therefore, we need not be surprised to find a similar condition in the congenital facial paralysis. Some of these cases of congenital paralysis are doubtless due to injury at birth, as from the forceps; but this explanation will not answer for all the cases and will not enable us to understand the simultaneous involvement of other nerves and the presence of other malformations in some of these cases.

Congenital facial palsy has been treated, as the Germans say, step-motherly. The existence of such a condition has been doubted, and the view has been held that at least in many cases the palsy did not exist previous to birth, but was produced during birth by pressure, especially when the forceps were used. In Langdon's² case the father and grandmother of the patient stated that he had never closed his left eye since birth; that no instruments were used at his birth; that the labor was not an unusually difficult one, he being the eighth of fifteen children, and that he had never had a fit or convulsion or unconscious attack. The occipitofrontalis, the inner half of the orbicularis palpebrarum, the pyramidalis, the levator labii superioris et alæque nasi, the levator labii superioris proprius, and the risorius on the left side of the face failed absolutely to respond to voluntary effort, faradism, or galvanism. Langdon thinks that his case was unique in etiology as well as distribution of the paralysis.

Sensory Fibres in the Seventh Nerve. The view that the seventh nerve contains sensory fibres is gaining ground. A case which seems to show this sensory representation in the facial nerve is reported by Biehl.³ A man had facial paralysis from a stab-wound received in front of the left ear, and sensation in the distribution of the left facial nerve was greatly impaired. He perspired quite freely over the left cheek while eating, and this cheek also became red. Biehl thinks that the case proves the truth of v. Frankl-Hochwart's theory, that the facial nerve contains sensory and vasomotor fibres, because the fifth nerve in this case could not have been injured. He thinks also that the restoration of sensation after operations on the fifth nerve is not due to regeneration of this nerve, or to an ingrowing of fibres from the fifth nerve on the opposite side of the face, or from cervical nerves, as the restoration occurs too quickly and the limits of the area in which

¹ Berliner klin. Wochenschrift, July 31, 1899, No. 31, p. 673.

² Journal of Nervous and Mental Disease, 1899, p. 593.

³ Wiener klin. Wochenschrift, February 8, 1900, p. 131.

sensation is preserved after removal of the Gasserian ganglion correspond quite well with the limits of the area of disturbed sensation in his case of facial paralysis. In my digest of last year in *PROGRESSIVE MEDICINE* I called attention to some interesting experimental work showing that the facial nerve is probably partly sensory. Cases of "rheumatic" facial paralysis are not suitable for the solution of the problem, because the disturbance of sensation may be attributed to involvement of the fifth nerve. From examination of cases of facial palsy I know that the points of exit of the fifth nerve on the face are occasionally tender to pressure, and the fifth nerve is as much exposed as the seventh, and probably as liable as the latter to suffer from exposure to cold, infection, etc.

Tic Douloureux. The interesting discussion on tic douloureux held at a recent meeting of the College of Physicians and the Philadelphia Neurological Society brought forth many valuable statements, and was a fair presentation of our present knowledge regarding this frightful disease. The surgical and pathological aspects I shall not touch upon, but leave them to others. The case of tumor of the Gasserian ganglion reported by Dercum, Keen, and Spiller¹ is the first of the kind observed in this country, and possibly the third case in the literature, and it is the first case that has been operated upon. The diagnosis was not so difficult. An endothelioma had been removed from the neck, and in addition to this the non-paroxysmal character of the neuralgia, its frightful severity and unvarying intensity, the deep-seated temporal pain, the nearly simultaneous involvement of all branches of the trifacial, the hyperæsthesia in the distribution of the fifth nerve, and the somnolency of the patient, suggested as strongly as could be the presence of a growth involving the Gasserian ganglion. Keen's operations in this case were brilliant; but of course a cure could not be expected. The case was also extraordinary in the persistence of so much sensation after the Gasserian ganglion had been destroyed, for I think there can be little doubt in the minds of all who saw these operations that the ganglion was entirely removed. My microscopical examination of the fragments of the ganglion revealed the presence of many nerve cells. Numerous minute endotheliomas were found on the inner surface of the cerebral dura. I have not been able to find a similar condition reported in literature.

We are still uncertain whether tic douloureux begins in the Gasserian ganglion or the peripheral branches. I believe that the evidence is in favor of the latter view; and it seems most probable that the peripheral branches which are most exposed should be the first to suffer, as the disease is a neuritis. The peripheral branches are exposed to changes

¹ Journal of the American Medical Association, April 23, 1900, p. 1026.

in temperature, to the effects of cutaneous eruptions, etc., whereas the ganglion is deeply buried within the cranium. Were the cause one arising within the body we should expect to find both Gasserian ganglia in the same person involved more frequently; but, as a matter of fact, bilateral tic douloureux is rare, although I have had such a case under my care.

Removal of the Gasserian ganglion has cured the pain in a number of cases, and while one or two cases are on record in which a cure does not seem to have been accomplished by destruction of the ganglion, these are, at least, exceptions.

Dana¹ distinguishes a form of tic douloureux different from the variety usually recognized. Ordinary painful tic he has found occurs usually at or after the middle period of life, and attacks women about twice as often as men. His opinions are based on a study of more than fifty cases under his own observation, and are, therefore, entitled to careful consideration. He has found that the disease rarely attacks men under the age of forty years, and he has seen only three cases in which tic douloureux began in a man under that age, whereas he has observed ten cases of an earlier commencement in women. The disease does not seem to be hereditary. A type not usually recognized, and described by Dana, is the migrainous, and is much the same as that spoken of by Putnam. The patients, usually young women, have frequent attacks of migraine, which after a number of years seem to result in true painful tic. There appears to be in these cases a combination of a central disturbance with a peripheral one, but the relation of these two disorders is not clearly defined, and probably cannot be at present. Cases of the migrainous type Dana finds are made worse by operation. He has definite histories covering a long period in seventeen cases, and in seven of these cases the disease has stopped or has been cured. In six others it has been improved and kept under control, while in four its progress has not been affected by anything that has so far been done. It appears, therefore, that in at least 20 per cent. the disease is amenable to treatment or is relatively benign; this statement may surprise some, as the prognosis is not always regarded as good as Dana's figures indicate.

It is interesting to read Dana's most recent statements regarding the use of strychnine in tic douloureux. After an experience covering six or seven years, and obtained from the observations of about fifteen cases, he concludes that in early cases—*i. e.*, in the first and second years, the strychnine treatment will almost invariably arrest or control the disease in anæmic and exhausted patients. In cases that have lasted over six or seven years, and in those with neuritis and sclerosis, the result is

¹ Journal of the American Medical Association, May, 1900, p. 1100.

doubtful, and there may be a failure to secure even a remission. In anæmic cases, even of long standing, it is often more effective, though relapses will occur. In old cases, lasting fifteen or twenty years, medical treatment is practically valueless.

Dana says he had one patient in whom removal of the Gasserian ganglion did not cure the patient. I know nothing of the history of this case, and of course do not criticise it; but when the statement is made that the Gasserian ganglion was removed, we want to know whether it was removed intact. Those who have operated on the Gasserian ganglion know that removal of this ganglion is a most difficult operation. It is one thing to have the ganglion taken out intact and quite another to have a few fragments of it, or possibly only the surrounding tissue, torn away. Even operation without removal of the ganglion may arrest the pain for a time, but arrest of pain is not proof that the ganglion has been destroyed.

We eagerly welcome any treatment, especially with drugs, which offers relief from the horrible suffering of trifacial neuritis, and the favorable results obtained by Bennett¹ in the employment of osmic acid lead us to hope that we have at last found some substance that will answer. Bennett finds osmic acid as useful for painful nerve stumps as for fifth-nerve neuralgia. Osmic acid is a very good hardening agent for nervous tissue, and possibly it produces a result in the destruction of the nerve not unlike that of resection. It would be interesting to know the condition of objective sensation after osmic acid has been injected into a nerve. Bennett exposes the nerve by as small an incision as possible, which in the case of the supraorbital, infraorbital, or mental branches need rarely exceed half an inch in length, and the nerve is then hooked up for purposes of fixation. The solution of osmic acid (1.5 per cent.), freshly prepared, is injected by means of a sterilized hypodermatic syringe, the needle of which is passed along in the substance of the nerve as far as it can be made to go. The total amount injected should be from 5 to 10 minims, and it should be introduced in two or three separate injections, in order that the whole nerve may be as much as possible soaked in the solution. During the injections a pledget of sterilized gauze or wool should be firmly held around the needle at the orifice of the wound, in order to prevent the escape of fluid externally.

Migraine and Trifacial Neuralgia. To J. J. Putnam² should be given the credit of pointing out clearly a relationship between neuralgia of the ophthalmic division of the fifth nerve and migraine. Not

¹ *Lancet*, November 4, 1899, p. 1220.

² *Journal of Nervous and Mental Disease*, 1900, p. 129.

infrequently, according to Putnam, ophthalmic neuralgia occurs in families and individuals having a tendency to migraine; and migraine of early years may turn later into ophthalmic neuralgia. Putnam had a case in which attacks of pain in the infraorbital area assumed a migrainoid type and recurred at intervals of several weeks in the form of definite seizures, each lasting one day and being attended, as a rule, by nausea and often vomiting, prostration, and sometimes hemicrania. He reports now another interesting case in which ophthalmic neuralgia following coryza recurred daily for several days at nine o'clock in the morning, and passed away again at one or two o'clock in the afternoon, and was associated with temporary hemianopsia and nausea. This patient was a young man, aged nineteen years, whose mother had been subject to typical migraine. There was a curious combination of symptoms of migraine and ophthalmic neuralgia in this case. Are we to believe, because of the periodicity, that malaria had any part in the causation of the symptoms? Periodicity of attacks of pain in the distribution of a branch of the fifth nerve and benefit from administration of quinine are presumptive evidence of the existence of malaria, but are not proof.

Thrombosis with Paralysis. When thrombosis occurs in an artery of one of the limbs—as is sometimes seen in infectious diseases, such as typhoid fever—paralysis of sensation and motion develops very rapidly in the limb. The cause of this has been found to be an acute change in the nerve fibres that were formerly nourished by this artery. Lapinsky¹ has studied six of these cases of acute thrombosis with paralysis, and in some of them he obtained a necropsy. If a collateral circulation is soon established the grave symptoms may pass away, but when thrombosis of the chief artery of the lower limb occurs, the usual result is loss of the pulse in the part, with coldness and discoloration of the limb, loss of the electrical irritability and of the reflexes, paralysis of motion and sensation, and not infrequently gangrene and death. This change in the nerves below the thrombus is a neuritis, for which Lapinsky proposes the name of neuritis ischæmica.

The Effect of Alcohol on the Nervous System. No one can deny that alcohol has a special tendency to cause disease of the nervous system, both central and peripheral. Cases of alcoholic neuritis are common, but thorough examination of the tissues in uncomplicated cases is rare, and I therefore commend to the reader the carefully prepared paper by Larkin and Jelliffe.² The patient who furnished the material for this study was a healthy adult who was in the habit of

¹ Deutsche Zeitschrift für Nervenheilkunde, vol. xv., Nos. 5 and 6, p. 364.

² Medical Record, July 8, 1899.

taking alcohol in excess at irregular periods, and died after one of these debauches. Factors other than alcohol that are known to cause cellular alteration, such as renal disease, toxæmia, or hyperpyrexia, could be excluded. Larkin and Jelliffe devoted the material to a study of the cellular changes, and as it could be hardened three hours after death, it was unusually well adapted to such a use. The nerve cells throughout the central nervous system were greatly altered, and various forms of cellular change were found. A careful review of the literature completes the paper.

Fibromata of the Ulnar Nerve. The case of multiple fibromata of the ulnar nerve reported by W. W. Keen¹ and myself was an unusual one. Fibromata confined to a single nerve have not often been observed. They are very painful, as pressure on the part in which the diseased nerve is contained causes irritation and much suffering. Keen was able to shell out from the surrounding nerve fibres in his patient a number of small fibromata. These on microscopical examination I found consisted of fibrous tissue, depending on an overgrowth of the endoneurium, and the nerve fibres in these parts had been almost entirely destroyed. It is not unlikely that new fibromata will develop in this case, and, unfortunately, it is not impossible that malignant growths may appear within the nerves. This tendency to fibrous thickening seems to be congenital, although the sufferer may attain middle life before he is made aware of such proliferation.

Optic Neuritis occurs in various forms of nervous disease, but it is so uncommon in tabes that we may well doubt the correctness of the diagnosis of tabes when optic neuritis is present. A few cases, however, are reported, and one recently has been published by Schuster and Kurt Mendel.² We do not know whether these are really cases of tabes combined with cerebral syphilis, or are cases of tabes with some other disease, such as tumor, or are cases of syphilis simulating tabes. These same authors report two cases of polyneuritis and three of myelitis with optic neuritis. A meningitis did not exist in all these cases, and, therefore, it is necessary to believe that the optic nerve is especially vulnerable.

Oculomotor Palsy in Typhoid Fever. De Schweinitz's³ paper on oculomotor palsy in typhoid fever is short but weighty. A great amount of study has not been given to the subject, and it is possible that we shall have more reports of such palsies occurring in other infectious diseases. De Schweinitz says that during the period of conva-

¹ American Journal of the Medical Sciences, May, 1900, p. 526.

² Neurologisches Centralblatt, 1899, Nos. 22 and 23.

³ Journal of Nervous and Mental Disease, 1899, p. 352.

lescence from typhoid fever dilatation of the pupil and paresis of accommodation are not uncommon, while mydriasis without cycloplegia and with normal vision may be the result of irritation of the sympathetic—I presume by the poison produced by the typhoid micro-organism. Paralysis of the extraocular muscles in typhoid fever is, according to de Schweinitz, a much rarer phenomenon, and probably seldom occurs during the height of the fever in the absence of intracranial complications. Double ptosis and abducens palsy in the third week of the disease have been reported. Extraocular palsies are more frequent during convalescence. More information on this subject is found in de Schweinitz's chapter in Keen's *Surgical Complications and Sequelæ of Typhoid Fever*. A case of complete right oculomotor paralysis with ptosis occurring during convalescence from typhoid is reported by de Schweinitz.¹ He refers to Osler's investigations, by which it was demonstrated that even in cases in which all of the symptoms point to meningitis in typhoid fever the actual pathological lesions of meningitis are not usually found. The Munich records show that meningitis occurs about eleven times in 2000 cases. I have not studied these records, but it is reasonable to suppose that microscopical examination was not made in all of these 2000 cases, and it is probable that many cases of slight meningitis—yet severe enough to cause symptoms—were overlooked. De Schweinitz's conclusion seems most reasonable, viz., that if meningitis is set aside as the etiological factor in cases of ocular palsy in typhoid the palsy must be attributed to the poison acting directly upon the nervous system, affecting in this way the oculomotor precisely as it may cause inflammation of other nerves, usually those of the extremities. We may compare these ocular palsies occurring during convalescence from typhoid, I think, with those occurring during convalescence from diphtheria and possibly other infectious diseases. Typhoid fever may thus produce symptoms indicating involvement of both the peripheral and central nervous systems. Convulsions, for example, are not common in typhoid fever, but Claytor² has seen three cases in which they occurred, although he had no necropsies. This complication of typhoid seems to have been observed by comparatively few persons.

Paræsthetic Meralgia means disturbance of sensation in the external cutaneous nerve of the thigh, this disturbance consisting of burning, tingling, numbness, subjective pain, and alteration of objective sensation—all in the distribution of the external cutaneous nerve. Musser and Sailer³ have collected ninety-nine cases of this affection, ten of these

¹ Philadelphia Medical Journal, March 3, 1900, p. 516.

² Ibid., p. 528,

³ Journal of Nervous and Mental Disease, 1900, p. 16.

being cases of their own. The opinion is held by some that the disease is not very rare, and that more cases are not reported because the disease is regarded as not being one of great importance. Musser and Sailer do not seem to accept this view, but they do not state in what period of time their ten cases were observed. The disease seems to be more common in men than in women, for out of the 99 cases 75 were in men. According to Musser and Sailer, it appears to be different in its clinical manifestations from any of the ordinary forms of neuritis or neuralgia, and yet many regard it as being probably a neuritis or neuralgia. I think that some of these cases resemble the pressure palsies. A patient coming to my clinic with a typical paræsthetic meralgia could give no cause for his symptoms, but one day a truss which pressed upon the external cutaneous nerves was detected. This man was presented by McCarthy before the Philadelphia Neurological Society. In this case I believed for a long time that the symptoms were due to a neurotic tendency, and possibly this predisposition aided the pressure in the production of the meralgia. Musser and Sailer report the occurrence of the disease in a father and child and a maternal grandfather of the latter. Heredity was noticed by them also in another case. These seem to have been the first instances of hereditary transmission of the affection. Diseases of nerves, probably, are occasionally hereditary, or the tendency to disease of the nerves exists in different members of the same family. I have had under observation two sisters with trifacial neuralgia, and I have known this condition to exist in mother and daughter. Faradic electricity, especially in the form of the dry brush, seems to be the treatment which has given most relief in paræsthetic meralgia. According to Musser and Sailer, the disease differs from neuralgia in that pain is often absent and paræsthesia is prominent, and in the pronounced objective disturbance of sensation. It differs from neuritis because the symptoms are persistent and rarely progress or retrogress, and the nerve trunk is not tender except just beneath the spine of the ilium. Trophic changes never occur, and the dissociation of sensation which is often found in the disease is rare in neuritis. To this I would reply that the disease may still be a chronic neuritis, and that absence of tenderness of the nerve trunks and of trophic lesions, the presence of dissociation of sensation, and the persistency of symptoms without change do not exclude chronic neuritis. This paper by Musser and Sailer is probably the best which has as yet been written on the subject.

Sollier¹ says this peculiar form of disturbance, known as paræsthetic meralgia, has been observed only in the external cutaneous nerve of the

¹ *Journal de Neurologie*, January 20, 1900, p. 21.

thigh, but I think he is incorrect in this statement. Sollier himself reports a case in which the disturbance occurred in branches of the external popliteal nerve: A man of fifty-three years had a useless right lower limb as the result of infantile spinal paralysis. He began to suffer from severe sciatica in this limb, which caused some pain in the posterior part of the thigh and great suffering in the external part of the leg. The foot was swollen and painful, but the urine was normal, and the condition could not be attributed to neuritis. Pressure over the sciatic caused no pain. The postero-external part of the leg and the external part of the dorsal surface of the foot were anæsthetic and were the seat of paræsthesia and diminished electrical sensibility. The limb was useless, and therefore the resection of the external popliteal nerve was performed. The patient reported after four months that he was cured of his paræsthetic meralgia. Nageotte examined the piece of nerve excised and found it diseased.

Sollier proposes for the affection in his patient the name of paræsthetic neuralgia, and possibly this name might be used to advantage, but, as Musser and Sailer have shown, there are some objections to it. In employing the term meralgia we do not commit ourselves to the view that the disturbance in the external cutaneous nerve of the thigh is different from that which may occur in other sensory nerves. The printer is often determined to have the word neuralgia instead of meralgia, and possibly he is wiser than the neurologist. It is questionable whether Sollier's case was exactly comparable with the paræsthetic meralgia of Roth, as the limb was paralyzed, and involvement of the muscles could not be determined. Motor palsy is not a part of the clinical picture of paræsthetic meralgia, and Sollier's patient, if he had not had a useless limb from childhood, might have had some paresis as the result of his paræsthetic meralgia in the distribution of the external popliteal nerve. The condition of the nerves in neuralgia, in neuritis, and pressure palsy demands careful study, and we are in great need of information as to the relation of these various forms of nerve disturbance to one another.

In the *Journal of Nervous and Mental Disease*, 1898, p. 756, I suggested resection of the external cutaneous nerve of the thigh in obstinate cases of paræsthetic meralgia, as no motor paralysis would result, and even sensation might not be as much disturbed as we would, *a priori*, imagine. I am not aware that this operation for this purpose had been previously proposed. Chipault¹ has resected this nerve, with considerable improvement in the symptoms.

¹ *Revue Neurologique*, July 15, 1899, No. 13, p. 513.

Herpes. Bleuler¹ seems to have made a very useful discovery in the employment of cocaine in herpes. He finds that it quickly relieves the pain and causes rapid recovery from the affection. He has employed it with success in twenty-three cases in the form of a 1 per cent. ointment made of equal parts of lanolin and vaseline. The ointment was spread over the herpetic area, and a cloth covered with it was fastened over the same region.

Finger Paralysis. A curious case of finger paralysis is recorded by Browning.² A man, aged seventy-two years, while trout fishing, felt a sudden snap of something at the back of the right hand as he was swinging the rod. He immediately found that he had extensor paralysis of the middle finger, passive motion being still quite free. This was promptly followed by severe pain in the back of the hand, extending partly down that finger and up the forearm. About a year and a half later the adjoining ring finger of the hand became affected in like manner while he was lifting a small box. Each attack occurred when the muscles were under considerable strain. The extensors only were affected. At the necropsy the extensor tendons of the middle and ring fingers of the right hand over the distal three-fifths of the dorsum of the hand were approximately natural, but from there to about one-third up the forearm—a space of about four inches—these tendons had so far disappeared and become amalgamated with their thickened sheath that only a strand could be separated as the possible remnant. A careful microscopical examination showed considerable alteration of tissue. Browning believed that a senile change had occurred in the tendons, rendering them liable to rupture. The case is a very rare one, and the paralysis does not seem to have depended on any involvement of the nerves.

Erythromelalgia. The case of erythromelalgia reported by Sachs and Wiener³ was quite a typical one until gangrene appeared, and they argue that the diagnosis of erythromelalgia should not be rejected on account of gangrene. This seems to me a tenable position, as we have good reason to believe that the vessels are much affected in erythromelalgia, and vascular disease may, of course, cause gangrene. Sachs and Wiener attribute more importance to arterio-sclerosis than to nerve degeneration as a cause of this disease, and they base their argument on the fact that the nerves were proportionally slightly degenerated and the vessels much altered in a case studied by them. The peripheral nerve ends in the diseased foot do not seem to have been examined, and even if they had

¹ *Neurologisches Centralblatt*, November 15, 1899, No. 22, p. 1010.

² *Journal of Nervous and Mental Disease*, 1899, p. 527.

³ *Deutsche Zeitschrift für Nervenheilkunde*, vol. xv., Nos. 3 and 4, p. 286.

been and had been found degenerated, the existence of gangrene would have made the interpretation of this degeneration uncertain. As far as I am able to see, the only essential difference between the views held by Sachs and Wiener, as expressed in their paper, and those of Mitchell and Spiller is in regard to the importance of nerve degeneration in erythromelalgia. The former authors hold that nerve degeneration is of comparatively little importance, and that the disease is essentially a vascular one; the latter hold that both arterial disease and nerve degeneration are important. I once had the opportunity of examining a piece of the musculospiral nerve excised by Keen at the point of an injury on account of paralysis of the extensors of the hand. The degree of degeneration of the nerve was very slight, but the paralysis had been great. Slight alteration of nerve tissue may, therefore, cause great alteration of function.

Atrophy and Hypertrophy. We are gradually learning that certain muscles which were supposed at one time to escape in muscular dystrophy are involved in some cases. The diaphragm was greatly atrophied in a case which I studied microscopically, and the heart is said to have been found hypertrophied in pseudohypertrophic muscular atrophy by Coste, Gioja, Reinecker and others. Stembo¹ has recently observed pseudohypertrophy of the heart in a boy, aged eight years, suffering from this same form of muscular atrophy. The heart was noticed to be enlarged by percussion and by a radiograph, but the pulse was small and soft (*pulsus parvus et mollis*). A microscopical study of the cardiac muscle would have been most interesting, but the case was observed only clinically.

Whether or not telangiectasia has any close relation with hypertrophy of a part of the body seems undetermined. A few cases have been reported in which both conditions have occurred in the same person, and such a case has recently been published by Kalischer.² One would be more inclined to believe that these two conditions were independent of one another. In Kalischer's case the hypertrophy and telangiectasia were not in the same parts, and both conditions were congenital. In a few cases of infantile spinal paralysis elongation of the bones has been found. Kalischer is hardly willing to accept the explanation that in these cases the relaxation of the ligaments affords more space for intra-articular growth of bone, and that therefore the growth is to be ascribed to this relaxation. If this were true we should find the elongation more common. He accepts the explanation of trophic influence and dystrophy of bone. We are getting into very deep water when we depend on the

¹ Deutsche med. Wochenschrift, July 20, 1899, No. 29, p. 478.

² Monatsschrift für Psychiatrie und Neurologie, vol. vi., No. 6, p. 431.

theory of trophic influence, but at times we can do nothing else. We have no proof of trophic nerves, and we do not know exactly what trophic influence means. We do know, however, that anomalies in growth of tissue occur in cerebral and spinal disease, and, for want of a better name, we call these anomalies trophic, but we are ignorant of the method in which these disturbances are produced. We see them in cerebral hemiplegia, and we see them in syringomyelia and disease of nerves, and, possibly more demonstrably still, we see them in more acute form in hysteria. Probably in the same group of affections should be classed urticaria, which appears suddenly and not infrequently after some indiscretion of diet. We can hardly do without the theory of trophic influence at present, although we are searching for something better.

Atrophy of muscles of spinal origin following a severe injury has been observed in a few cases; two such cases were reported by Erb and one, with necropsy, by de Buck. In the latter atrophy of the anterior horns of the spinal cord in the lumbar region was found. Sano¹ has studied a case in which a man was severely injured in the back and thorax, and about two months and a half following the accident the right lower limb began to atrophy and present hyperæsthesia. Reaction of degeneration was not obtained. The absence of pain on pressure over the nerves, of trophic and vasomotor disturbances, as well as the absence of disturbed sensation limited to the distribution of certain nerves, made a diagnosis of neuritis improbable. The case seemed to be more probably one of spinal atrophy, but as no necropsy was obtained we are in ignorance of the nature of this atrophy. Muscular atrophy following trauma is an interesting subject and one concerning which we need information.

In a case of the pseudohypertrophic form of muscular dystrophy with atrophy of bone in a man, aged nineteen years, reported by Schultze,² the femur was only the thickness of the middle finger, and the humerus was even thinner. The spinal cord, examined microscopically, was found to be normal even by the method of Nissl. Two similar cases have been reported in literature: one by Friedreich and one by Le Gendre.

The existence of progressive muscular dystrophy and progressive atrophy of bone in the same person was believed by Schultze to be hardly a chance occurrence. Arrest in the growth of bone is seen in poliomyelitis, and osseous atrophy in the adult has been observed by Dejerine and Theoharic in hemiplegia. Neither process in Schultze's

¹ *Journal de Neurologie*, November 20, 1899, No. 23, p. 441.

² *Deutsche Zeitschrift für Nervenheilkunde*, vol. xiv., Nos 5 and 6.

case seemed to be dependent on the other, but both were due to a common unknown cause. An elder sister of the patient had atrophy of bone and the affection called by Marie "spondylose rhizomélique." Early involvement of the jaw and contracture of the sternocleidomastoid muscle of long duration were unusual features of "spondylose rhizomélique." The disease in the sister was striking on account of the condition of the first patient. It seems strange that atrophy of bone has only been noticed in three cases of muscular dystrophy. Schultze refers to a case of muscular dystrophy, reported by Eulenburg, in which hypertrophy of bone occurred. I also reported a case of muscular dystrophy, sent to me by W. W. Keen, in which one lower limb was very much shorter than the other, and the head of the femur was almost dislocated. There was evidently articular disease in this patient, probably due to the same cause as the muscular dystrophy.

Reflexes. Reflexes are of great value in enabling us to make a diagnosis of the level of the cord affected; thus we know that loss of the knee-jerk from a spinal lesion means that the lumbar cord between the second and fifth segments has been injured; loss of the Achilles jerk means that the lower lumbar and upper sacral areas have been involved. The spinal levels corresponding to the reflexes in the upper extremities known to us are not so well determined, and the reflexes are not very numerous. The discovery of a new reflex is, therefore, a distinct gain to neurological science, and a discovery of this kind has been made by v. Bechterew,¹ and the reflex is said to be fairly constant. A blow on the inner side of the scapula near the lower angle is said to cause adduction of the humerus and sometimes slight outward rotation, produced chiefly by contraction of the infraspinatus and teres minor muscles. There may be abduction of the arm and slight flexion at the elbow. The reflex arc is believed to be through the cervical swelling of the spinal cord. This reflex v. Bechterew has named the *scapulo-humeral reflex*, and he thinks it is of value in making a differential diagnosis between atrophy of the shoulder girdle of cerebral or of spinal and nerve origin; in the first case it should be increased and in the last diminished.

We usually find increased muscular tonicity associated with exaggerated tendon reflexes, but van Gehuchten² a few years ago pointed out that a relation between these two conditions is not well established. His views have been opposed by Marinesco, Grasset, Parhon and Goldstein. I am convinced that van Gehuchten is correct when he says that hypotonicity of the muscles may occur with exaggerated tendon reflexes.

¹ Neurologisches Centralblatt, 1900, No. 5, p. 208.

² Journal de Neurologie, December 5, 1899, No. 24, p. 461.

Van Gehuchten has recently replied to the criticism raised by his writings on this subject. A few years ago Charles W. Burr showed me one of his patients who presented a high degree of hypotonicity of the muscles of the lower limbs with exaggerated knee-jerks, the condition resulting from a spinal lesion. Burr, unfortunately, has not yet put this case on record, but he will probably do so. This case removed all doubt from my mind that exaggerated knee-jerks may occasionally exist with muscular hypotonicity of the lower limbs, but this combination is undoubtedly a very rare one.

A case of hemiplegia with flaccid paresis and exaggerated superficial and deep reflexes reported by Sano¹ is employed by van Gehuchten² as further proof of his theories. He likewise reports a case in which the reflexes were greatly exaggerated—apparently a case of disturbed function without organic change—and yet the muscular tonicity was normal.

BABINSKI'S REFLEX. "*Le phénomène des orteils*," so called by Babinski, more commonly known as Babinski's reflex, is the extension of the toes upon the metatarsus in the plantar reflex in place of the normal flexion. This phenomenon has been found by Babinski in lesions of the pyramidal tract. In new-born infants, however, he noticed that the plantar reflex commences with extension of the toes, and in cases of total transverse lesions of the cord he did not obtain any plantar reflex. Collier³ has made investigations in many cases, normal and pathological, and confirms in all essential points the statements of Babinski, van Gehuchten, and Brissaud; he says also that this change in the character of the plantar reflex may be the only unequivocal objective sign of a lesion of the pyramidal system; that it is never found under other conditions, and is a sign of great clinical value. He obtained the "extensor response" in three cases of total transverse lesion of the cord, but there was no anatomical proof of a total transverse lesion in two of his cases. *Pes cavus*, according to him, is produced by a state of reflex hypertonicity preponderating in those muscles which respond most vigorously in the plantar reflex. We hear much now in regard to Babinski's reflex, and it seems to have considerable importance in assisting a diagnosis of lesion of the pyramidal tract. Motor paralysis is usually a conspicuous sign of lesion of this tract, but if Babinski's reflex may be the only unequivocal sign in certain cases we recognize its importance.

Babinski⁴ has observed his toe reflex, the "*phénomène des orteils*," during or following an epileptiform convulsion, and was unable to obtain it in hysterical convulsions. The sign seems to be of value, therefore,

¹ *Journal de Neurologie*, July 20, 1899, No. 15, p. 288.

² *Ibid.*, No. 14, pp. 261, 291.

³ *Brain*, vol. xxii., p. 71.

⁴ *Revue Neurologique*, July 15, 1899, No. 13, p. 512.

in making a diagnosis between hysteria and epilepsy in doubtful cases, although the absence of this sign does not prove that epilepsy does not exist.

He has recently¹ reasserted that the extension of the toes following irritation of the foot—instead of the flexion of the toes occurring in normal persons as a result of this irritation—may be seen during epileptic attacks and in strychnine poisoning. It is not present in all cases of lesion of the pyramidal system, and is never present when this tract is normal.

The statement made by Babinski that the extension of the toes in the plantar reflex never occurs in healthy adults has demanded investigation on the part of others. Martin Cohn² finds that the statement is not quite correct; that while simultaneous extension of all the toes is rare in persons with a normal nervous system, it does occur occasionally. So it is with most signs believed to be absolutely pathognomonic; more thorough study reveals the exceptions. Babinski obtained extension of the toes in the new-born, but M. Cohn and Schüller, in separate series of investigations, usually obtained no reflex of the toes in young children. Schüller,³ like Cohn, obtained extension of the toes in a few healthy adults. Judging from Schüller's results, the sign, when present, would seem to point to organic disease of the pyramidal tract; but from Cohn's, to organic or functional disturbance of this tract. The sign, however, is not pathognomonic.

It seems that we have in Babinski's reflex a valuable diagnostic sign. Cestan and Le Sourd do not agree with those who dispute its value, inasmuch as they have examined three hundred persons, many of whom were normal, and have never obtained extension of the toes when the pyramidal tracts were intact. Extension of the toes occurs in young children, and the age at which this reflex changes in character has never been determined. In rare cases the pyramidal tract may be injured without the appearance of Babinski's reflex. The sign becomes of great value, according to Cestan and Le Sourd,⁴ when a diagnosis between hysterical and organic hemiplegia must be made. Cestan has found this "phenomenon of the toes," as Babinski calls it, one hour after an apoplectic "insult," and at a time when the knee-jerk was diminished; and on account of this sign he was able to say that the case was organic, although it had been regarded as hysterical. I have found, one week after an apoplectic insult, very distinct extension of the toes from irritation of the foot in a case of organic hemiplegia, and at a time when the knee-jerk was lost. The sign, according to Cestan

¹ *Revue Neurologique*, February, 15, 1900, No. 3, p. 146.

² *Neurologisches Centralblatt*, July 1, 1899, No. 13, p. 580.

³ *Ibid.*, p. 585.

⁴ *Gazette des Hôpitaux*, November 23, 1899.

and Le Sourd, is of considerable value when disease of the posterior columns masks the degeneration of the pyramidal tract, as in combined sclerosis of the spinal cord or Friedreich's ataxia. Ankle-clonus may be caused by articular disease, but Babinski's reflex is never so caused. The reflex is found in tabes when the pyramidal tracts become involved. In a case under my observation in which the diagnosis between cerebro-spinal syphilis and tabes was exceedingly difficult the reflex was absent, although the knee-jerks were very prompt.

It is to be hoped that the value of this sign will be proved by further observations. It promises to be of great assistance to us in diagnosis. I have searched for it in many cases, and am inclined to think that it is not absolutely pathognomonic of organic disease of the pyramidal tract, although in the cases in which I have seen it exceedingly well marked I had reason to believe that the pyramidal tract was not normal. Babinski himself does not assert that it is a pathognomonic sign.

I have observed two cases of recent hemiplegia in which the Babinski sign was present and the knee-jerks were absent. Both patients died within a few weeks after the apoplectic "insult." The combination of lost knee-jerks with Babinski's sign seems to me to be of serious omen.

Walton and Paul¹ have studied the plantar reflex in 200 hemiplegics and diplegics, old and new; in 30 cases of spinal disease involving the pyramidal tract; in 70 infants and 400 cases in which no recognized lesion of the pyramidal tract existed, the last group including 200 cases of nervous disease, both organic and functional, 100 normal individuals, and 100 cases taken at random from hospital patients outside the neurological department. They think that their study confirms the claim that the Babinski phenomenon furnishes a most important positive sign and definite aid in diagnosis. It would seem, according to them, that this plantar reflex stands for something aside from other symptoms, a distinction which we can hardly accord even to the knee-jerk, the importance of which, when taken in connection with other symptoms, is paramount. Unlike the ankle-clonus, it is rarely difficult to elicit when present; it appears early in the disease, when every diagnostic sign is needed, and may be present during the later stages when other reflexes have disappeared on account of ankylosis or muscular atrophy.

Walton and Paul find it is difficult, or often impossible, to determine the nature or even the existence, as regards the toes, of a definite plantar reflex in early infancy. In young infants automatic movements of the toes are almost constant, varying from extreme extension and separation to the opposite position. The Babinski reflex is not constant in early infancy, they think.

¹ *Journal of Nervous and Mental Disease*, June, 1900.

From their study of cases of pyramidal tract disease they conclude that their results go far toward establishing the fact that extensor reflex, when present, is pathognomonic of disease of the pyramidal tract; that absence of movement, especially in old cases, does not preclude such disease, while flexion of the toes is strongly indicative of integrity of the pyramidal tract.

The Babinski reflex they found in about 70 per cent. of hemiplegias and diplegias, and in approximately the same percentage of cases with disease involving the pyramidal tract in the spinal cord. The reflex is never present in health, and probably not in either functional or organic nervous or other disease not implicating the pyramidal tract.

When this paper was read before the American Neurological Association Knapp reported in the discussion a case of amyotrophic lateral sclerosis in which the Babinski reflex was absent, and I also described a similar case. In my patient the small muscles of the hands were exceedingly atrophied, the knee-jerks were exaggerated, but the Babinski reflex was not obtained. We shall probably come to regard the Babinski phenomenon as a valuable sign in connection with other signs, but I should hesitate to look upon it as pathognomonic of disease of the pyramidal tract.

KNEE-JERK AND DIABETES. Grube¹ has collected notes on a large number of cases of diabetes mellitus in which the knee-jerk was tested several times and on different occasions. He makes two classes of cases. Those in which the excretion of sugar could be successfully repressed, or at least reduced to a very small amount by a special diet, he groups together as "slight diabetes," while those in which even on a very guarded diet sugar was excreted in somewhat large quantities are tabulated as "severe diabetes." Out of a total number of 310 cases the knee-jerk was lost in 84—*i. e.*, in 2.53 per cent. The loss of the knee-jerk increased in frequency with advancing years, and was more than twice as frequent in the slight diabetes. In four cases the loss of the knee-jerk on one side was due to neuritis of that side. In two cases of neuritis the knee-jerk was increased, and in eleven cases with loss of the knee-jerks bilateral neuritis existed. Most of the patients were men. Grube disagrees with Gowers, and believes that in its onset diabetic neuritis is very often, if not always, closely related to the amount of sugar present, but that when the inflammation is once started it runs its own course independently without being apparently influenced by the dietetic treatment. The cramps of the muscles of the leg in diabetes are due to irritation of the nerves by the sugar in the blood. Grube does not report any necropsies in cases of diabetes, and does not refer

¹ *Lancet*, July 22, 1899, p. 203.

to those reported in literature in which the spinal cord was found diseased. It would be a mistake to attribute too much to neuritis in these cases of lost knee-jerk, and I am inclined to think that the muscular system may also be affected. I can refer here to a case reported by C. K. Mills, already mentioned, in which I found fatty degeneration of muscles as the cause of the lost knee-jerk.

PATELLAR REFLEX. The loss of the patellar reflex in complete transverse lesions of the spinal cord situated above the lumbar region has been explained by a variety of theories, most of them ignoring any degeneration of the peripheral reflex arc. Brasch¹ has found degeneration of the motor part of the reflex arc in a case of this kind, and in my digest last year in *PROGRESSIVE MEDICINE* I referred to a similar case reported by Brissaud. Brasch explains this degeneration by the well-known theory of Marinesco, modified by Goldscheider, viz., that motor cells are preserved in their normal condition by irritation transmitted to them from the periphery of the body and from the brain, and that in transverse lesions of the cord above the lumbar region the motor cells of the lumbar cord degenerate when the cerebral influence is removed. The theory is very interesting, but it is one of those things that can never be proved.

The patellar reflex is not always absent in cases in which a complete transverse lesion exists in the upper part of the spinal cord. It was not absent in a case of syringomyelia studied by Hudson,² although a total transverse division of the cord in its upper portion was found at the necropsy. I cannot do justice here to the interesting pathological reports by Barker and Flexner, published in connection with Hudson's paper, as such reports cannot find place in my digest, and I shall merely call attention to a very rare form of degeneration described as "kolbige degeneration" (Rosenthal) or "degeneratio micans" (Barker). The many papers written on the pathology of syringomyelia have added much to our knowledge, but they have also made exceedingly prominent the fact that we have much to learn regarding this condition.

REFLEX CENTRES. It seems that the reflexes necessary for existence have the central portion of their arc in or below the basal ganglia—at least we have very good evidence that this is the case in the newborn. A few instances are on record in which a child has lived several days without a cerebrum. One of the most recent is reported by Zappert and Hitschmann.³ A child without basal ganglia or the parts of the cerebrum above these lived eleven days, and the deformity was first detected at the necropsy. The infant had been able to suck, to whine

¹ Vereins-Beilage, No. 21; Deutsche med. Wochenschrift, 1899, No. 23.

² American Journal of the Medical Sciences, June, 1899.

³ Arbeiten aus dem Institut für Anatomie und Physiologie, etc., Obersteiner, No. 6.

and to make involuntary movements, even though the pyramidal tracts were absent. The study of the interesting microscopical details of this case would involve us too much in anatomical questions, and would hardly be suitable here. The possibility of involuntary movements in the absence of the central motor tracts need not surprise us very greatly when we recall that in the new-born child these tracts normally are not medullated, and possibly have little function, although some of the lower animals have non-medullated pyramidal tracks at birth and yet have much motor power. Extra-uterine life for a period of several months seems to be impossible in a human being without a cerebrum.

FUNCTIONAL DISEASES.

Under this heading I have placed those diseases whose pathology is unknown to us. We call them functional because we see chiefly disturbance of function, but there may be an organic basis which escapes detection. Chief among these functional diseases are epilepsy and hysteria, but we must at present include also the asthenic bulbar paralysis, family periodic paralysis, chorea, etc. Diseases such as acromegaly and paralysis agitans occur with organic changes, but the pathology of these affections is very obscure, and we are far from knowing their pathogenesis. Organic changes—contracture of muscles, so-called trophic lesions, etc.—are seen in hysteria, and mental deterioration is well known in epilepsy; but all these are results rather than causes of the disorders. In using the term “functional” we acknowledge our ignorance, but we have no better classification. I confess that I do not feel at all assured that the causes of hysteria and epilepsy will ever be revealed to us. In the former many of the symptoms appear and disappear so rapidly that it is difficult to believe they are due to structural change; or, at least, to a structural change detectable by the microscope.

Epilepsy. Epilepsy is one of the most important diseases of the nervous system, and manifests itself in various ways. An interesting form is the *epilepsia rotatoria*—called by this name because the person, during the attack, makes revolutions. A very good description of this peculiar rotary type in three cases and also of one case of *epilepsia procursiva* is given by P. Schuster and K. Mendel.¹ In the procursive epilepsy the person may traverse considerable distances; thus Schuster and Mendel's patient was known to run up and down two flights of steps in an attack, and on one occasion he ran around the edge of a small island without entering the water. He avoided obstacles, which

¹ Münch. med. Wochenschrift, July 11, 1898, No. 28, p. 918.

is especially noteworthy—though such avoidance is not unknown—as in an epileptic attack the patient often suffers severe injury—one of Schuster and Mendel's three patients with rotary epilepsy, for example, during her revolutions in bed, was suffocated by boring her face into the pillow. The revolutions in the rotary form of epilepsy may occur while the patient is in bed or is standing. C. K. Mills and I observed a case in which the patient, during an attack, arose from his seat, revolved on the long axis of his body, and then resumed the sitting posture. The attack was attended with certain well-recognized manifestations of epilepsy.

According to Clark,¹ only twenty-seven cases of paramyoclonus associated with epilepsy have been reported; to this number Clark adds a case observed by himself. In his case bilateral paroxysmal spasms of trunk and shoulder muscles, occasionally extending to the thighs and arms, were seen, but they were never in the forearms, legs, hands, or feet. They were always shock-like in character, and were unattended by mental disturbance. Clark thinks it is surprising that myoclonus is not seen more frequently associated with epilepsy. From its paroxysmal and spasmodic character it seems to have some relationship to epilepsy, but the undisturbed consciousness in paramyoclonus proves, according to Clark, that the differences in the underlying lesions in the two affections are considerable. Myoclonus, he thinks, is probably more related to the choreas pathologically. This may be, but as we do not know the pathology of any of these spasmodic affections we had better not attempt to draw too sharply defined distinctions. Consciousness is not always lost in epileptic convulsions. I have a mental picture of a man with violent transitory spasmodic movements of one limb and no disturbance of consciousness. We are not at all certain that the loss of consciousness in epileptic attacks and its preservation in paramyoclonic attacks are not dependent upon the degree of involvement of the brain.

The papers of Ohlmacher² are among the most interesting of recent contributions to the study of epilepsy. Ohlmacher has noticed a lymphatic constitution in eight cases of "idiopathic" epilepsy, and concludes that there is a close connection between these two conditions; he even goes further and suggests that the lymphatic constitution is the common basis for a variety of affections, viz., genuine epilepsy, rhachitis, eclampsia infantilis, thymic asthma and thymic sudden death, tetany, and possibly exophthalmic goitre. The gliosis and glioma may be changes produced by a lymphatic poisoning, and therefore may be dependent

¹ Archives of Neurology and Psychopathology, vol. ii., Nos 3 and 4, p. 473.

² Bulletin of the Ohio Hospital for Epileptics, vol. i., Nos. 2 and 3.

on the same cause as the epilepsy. The essential features of the lymphatic constitution are the persistent and enlarged thymus, the general lymphadenoid hyperplasia, the arterial hyperplasia, evidences of old rhachitis, etc. The most interesting and valuable part of Ohlmacher's work is the finding of the lymphatic constitution in eight cases of idiopathic epilepsy. Whether Ohlmacher's conclusions are correct or not we cannot tell, but attention will doubtless be directed to this subject, and we shall hear more of the lymphatic constitution in epilepsy.

Ohlmacher¹ concluded from his pathological studies that rickets plays an important part in the history of idiopathic epilepsy. Gowers believes with Sir William Jenner that almost all convulsions associated with dentition are really due to the constitutional condition of retarded development called rickets. These convulsions of infancy have a share in predisposing to convulsions in later life. Ten per cent. of cases of epilepsy are in children who have suffered from rickets. From these facts Gowers concludes that a considerable proportion of cases of epilepsy are really within the range of preventable diseases. Such statements coming from Gowers cause us to reflect. Ohlmacher is even more positive in his statements. He thinks that rickets might be prevented, and with no rickety children perhaps there need be no thymic asthma, no thymic sudden death, no tetany, no infantile eclampsia, and no epilepsy. Abolish epilepsy! Such a thing seems at present the wildest sort of air-castle building, but equally improbable things have come to pass. Gladly would we part with farms for epileptics and all else employed in the treatment of epilepsy, but, unfortunately, we shall need them longer.

That epilepsy may develop years after a cerebral injury has been received seems to be unquestionable, and we are not surprised to read that in a case observed by James² the epileptic convulsions developed ten or eleven years after an injury to the head. The patient had never had fits before the injury, and no other member of his family had ever suffered from fits of any kind. There was no history of tuberculosis or syphilis. Notwithstanding these statements, a doubt must remain as to whether the injury, after all, was the real cause of the convulsions. We occasionally observe cases in which epilepsy develops without known cause and without any epileptic family history. I have had such cases under my own observation, and these cannot be regarded as very uncommon. An operation was performed on James' patient and a silver plate was inserted in the skull. His condition improved during the eighteen months following. James fully recognized that this was not sufficient

¹ American Journal of Insanity, vol. lvi., No. 4, p. 581.

² Lancet, July 22, 1899, p. 207.

time to permit a decision to be made regarding a cure. We should be very cautious in speaking of a "cure" in any case of epilepsy, and we are wiser when we simply say that no convulsive attack has occurred during a certain time. Epilepsy may return even after many years, and what then becomes of our boasted "cure?"—a relapse. That epilepsy may occur many years after a cerebral trauma seems most probable. I reported two or three years ago a case in which convulsions developed many years after the motor cortex of one hemisphere had been destroyed in early childhood.

In a case of tumor of the temporal lobe, shown at the necropsy to be so located, described by van Gehuchten and le Mort,¹ attacks occurred which remind one of the statements of Hughlings Jackson regarding hallucinations of smell caused by a tumor in this situation. The patient complained of a bad taste in his mouth and of an odor of perfume. These gustatory and olfactory sensations were followed by vertigo and vomiting. This aura of the special senses occurred frequently during the day, sometimes every quarter of an hour, but was less frequent during the night. The tumor caused a considerable enlargement of the left temporal lobe.

Hughlings Jackson, with Purves Stewart,² has recently written again on epileptic attacks, with a warning of a crude sensation of smell and with the intellectual aura (dreamy state). Their patient had gradually increasing mental dulness, followed nine months later by attacks of headache and nausea, with a sensation of smell like camphor or ether, and a "dreamy state," in which he "felt as if he were saying, doing, and looking at things which he had experienced before." The surrounding people seemed to have strange expressions on their faces, and people and things seemed to be far away. Later the attack changed in type. The paroxysmal smell ceased to occur, but there was occasional momentary unconsciousness. A few days before his death slight left hemiplegia developed, most marked in the face, without hemianopsia or hemianæsthesia. There was some impairment of hearing in the left ear and optic neuritis in the right eye. Two days before death the headache became more localized, and was referred to the right temporal region. The patient rapidly became worse, and died from failure of respiration. Unfortunately, no necropsy was obtained, but Hughlings Jackson and Gowers believed that there was some lesion, probably a tumor, in one temporosphenoidal lobe.

Hughlings Jackson has several times written on the group of cases to which this one belongs, and has suggested for them the name of uncinate group of fits. The uncinate gyrus probably is, in part at

¹ *Journal de Neurologie*, April 5, 1900, p. 121.

² *Brain*, Winter, 1899, p. 534.

least, the cortical centre of smell and possibly of taste, and we can understand that irritation of this portion of the brain, as by a tumor, could give rise to peculiar sensations of smell. In some cases there are movements of chewing, smacking of the lips, spitting, etc. The dreamy state is present in the paroxysms of many, but not of all, cases of the uncinate group of epileptic fits. A number of cases of lesion in this part of the brain are cited by Purves Stewart, to show that there is a good foundation for Hughlings Jackson's views regarding the results of irritation of the uncinate gyrus and the adjoining regions.

TRANSIENT PARALYSIS AS AN EPILEPTIC EQUIVALENT is a rare sign of epilepsy. To Higier may be given the credit of bringing the subject prominently before the medical world. Within the past year we have had an excellent paper by McConnell,¹ with the report of a case of this form of epilepsy. His patient had at times epileptic convulsive attacks, but occasionally in the interval between these attacks she had paræsthesia, followed by transient loss of power, unaccompanied by loss of consciousness or memory or by any involvement of the cranial nerves. No convulsive movements either preceded or immediately followed these attacks. McConnell has collected a few similar cases, and has discussed the subject with a freedom from prejudice most commendable. He brings to us the report of an interesting case of temporary paralysis, and shows how the palsy may be epileptic without asserting that it is epileptic. Higier's arguments are given to show how frequent and how well recognized is palsy occurring at certain periods of the epileptic attack. The subject is an interesting one, and should engage the attention of those who have large opportunities to observe epileptic patients.

EXHAUSTION PARALYSIS. About forty cases of epilepsy exhibiting exhaustion paralysis, and a large amount of literature on the subject, have been studied by Clark.² Craig Colony has afforded excellent opportunities for the observation of epileptic phenomena and of comparison of the phenomena in one case with those in others. Clark is very thorough in his work, and gives recognition to the writings of others. The theory of exhaustion paralysis, he says, is conclusively proven by physiological experimentation and pathological data derived from the observation of phenomena in epilepsy. This exhaustion paralysis is localized to parts participating in the local spasms or confined to those parts most convulsed in general seizures. The temporary paralysis may become permanent, and exist as a true hemiplegia, with organic changes of a varied nature. This last statement is one of unusual interest. In Plate I.,

¹ *Journal of Nervous and Mental Disease*, 1899, p. 355.

² *Archives of Neurology and Psychopathology*, vol. ii., Nos. 3 and 4, p. 321.

Clark gives the photograph of a man in whom the exhaustion paralysis had become more or less permanent. The patient had had 1500 attacks during one year. The left shoulder and hand, which were most persistently exhausted in the seizures, had assumed a position nearly similar to parts in old organic hemiplegia. There is much opportunity for study in the changes leading to permanent paralysis from exhaustion paralysis. But to return to Clark's views: Exhaustion, he thinks, is quite sufficient to explain the temporary paralysis in epilepsy, and this exhaustion is one of the cerebral centres. The apparent severity of muscular convulsions is not a fair index to the amount of paralysis that may follow. True exhaustion cases, independent of infantile palsy affections, are not common. Of course, in these cases of infantile palsy the paralysis is of organic nature, and exhaustion palsy might be expected in a person in whom the brain is already weakened by disease and its powers of recuperation are below the normal; but Clark goes on to say that exhaustion cases independent of organic lesions occur and help bridge over the wide breach existing between so-called Jacksonian epilepsy and idiopathic epilepsy.

It is to be hoped that no one will attempt to write on exhaustion paralysis without first carefully reading Clark's monograph. Allied to the exhaustion paralysis of epilepsy is the paralysis—or more commonly paresis—of chorea, and the latter is almost an untilled field for scientific research. I cannot but believe that the weakness not infrequently seen in chorea depends on much the same causes as the paralysis of epilepsy.

JACKSONIAN EPILEPSY is only a part of generalized epilepsy; consciousness is preserved in it, and is clouded only in severe unilateral convulsions. The reason for this, according to Donath,¹ is that an irritation which affects immediately the psychomotor centres may be comparatively slight, and yet be sufficient to produce convulsions, whereas irritation originating in a part remote from these centres must be considerable in order to extend to the central gyri. Convulsions do not occur unless the central gyri are irritated. Attacks of generalized epilepsy may substitute the partial attacks. Jacksonian epilepsy may also appear in the form of status epilepticus. Donath gives a definition of epilepsy which is quite comprehensive. Epilepsy, he says, is an abnormal excitement of the cerebral cortex, which increases suddenly, is periodical in its manifestations, has a typical course, and disappears rapidly. Whether the attack occurs with or without unconsciousness and amnesia depends on the strength and extent of the irritation.

Donath reports three cases of ambulatory automatism to which he gives the name of poriomania. Only in one case, and only on one occa-

¹ *Archiv für Psychiatrie*, vol. xxxii, No. 2, p. 335.

sion, was a true epileptic convulsive attack observed. I grant that these were probably cases of epilepsy, but it seems to me that Donath assumes that they were epileptic with rather too much certainty.

Cortical irritation seems to be necessary for the production of epileptic convulsions, *i. e.*, tonic-clonic convulsions, although tonic contractions of the muscles may be produced from irritation of the motor tracts below the cortex. Bischoff¹ gives the views usually held at the present time. The typical Jacksonian epileptic attacks—characterized by tonic-clonic convulsions extending from one group of muscles to another, corresponding to the topographic arrangement of the motor cortical centres—are only obtained when the cerebral cortex is intact; but general, irregularly developing tonic contractions are seen after the motor cortex has been removed. It is necessary to make a distinction between the tonic and clonic convulsions, because clonic convulsions seem to be the expression of cortical irritation. The series of experiments conducted by Bischoff show that tonic contractions may be produced by irritation of the pyramidal tracts below the cerebral cortex; but these contractions do not persist after the irritation has been removed, and are not associated with clonic contractions. Recent investigations seem to show that the pyramidal tracts are by no means the only motor tracts, and our increasing knowledge of the finer anatomy of the nervous system is beginning to let in considerable light upon the physiology of the body. The studies of Probst² and others seem to show that several motor tracts—extrapyramidal tracts—are contained in the area posterior to the anterior pyramids, and it is doubtless through a knowledge of the functions of these tracts that we may hope to understand some of the puzzling phenomena observed in health or disease, such, for example, as flaccidity of the muscles of the lower limbs with increased knee-jerks.

A knowledge of the fact that only cortical irritation may cause true Jacksonian attacks—tonic-clonic contractions spreading regularly from muscle to muscle and persisting after the irritation has been removed—enables us to understand why a tumor growing from below upward and arising within a cerebral hemisphere may fail to produce Jacksonian convulsions. The cortex in a case of this character has been irritated after the motor fibres connecting it with the spinal cord have been destroyed. We might expect to see tonic spasms, perhaps only of a few moments' duration, result from the subcortical irritation of the motor tracts; but the true Jacksonian attacks, occurring not infrequently in cases of tumor in or near the motor cortical area, would probably be absent. In this we have an example of the value of scientific study

¹ Wiener klin. Wochenschrift, September 28, 1899, p. 961.

² Deutsche Zeitschrift für Nervenheilkunde, vol. xv., Nos. 3 and 4,

and the necessity of encouraging it for the alleviation of human suffering. Jacksonian convulsions associated with the other signs of brain tumor usually justify an exploratory operation on the head, and give hopes of finding a superficial lesion. This, unfortunately, does not mean that every superficial tumor can be removed.

The case of *ambulatory automatism* reported by McCarthy¹ is interesting in several respects. Unlike most cases in which this tendency to wander exists, the attack lasted only a few minutes. The boy had had convulsive seizures in early childhood, and this ambulatory automatism had developed about the age of puberty. Puberty and the menopause are trying periods to one of epileptic tendency. I had a patient not very long ago whose convulsions ceased shortly after puberty and returned at the menopause.

Henry² has observed a case of what he calls pure psychical epilepsy which resembles those described as epileptic ambulatory automatism. A man, aged forty-three years, who had been given to alcoholic excesses, but was without any taint of epilepsy in his family or personal history, had three attacks of psychical aberration lasting for several hours, each similar in onset, symptoms, and subsequent course. During the intervals between these attacks he had perfect mental health. These attacks were in each instance preceded by a feeling of dulness and mental hebetude, followed by nausea without vomiting. Upon this condition of dulness rapidly ensued that of unconsciousness, lasting several hours, during which automatic acts were performed, conversations held, and distances traversed in cars. On the administration of bromide and iodide the attacks disappeared. Henry bases his diagnosis of epilepsy in this case chiefly on the history of alcoholic excesses, the presence of an aura represented by nausea preceding an attack, the perfect mental equilibrium which intervened between the attacks, the absence of any signs of organic brain disease, and the prompt and lasting response to the administration of bromide. This man had nephritis, but it is difficult to attribute his peculiar mental manifestations to this cause. It is quite true, as Henry says, that during one of his attacks he would have been quite capable of carrying out any violent impulsive idea that might have occurred to him, and would have been entirely irresponsible in the matter; indeed, in one of his attacks he was so violent that his hands and feet were confined to the bed with straps. The importance of a correct understanding of these cases is evident, and whoever has an opportunity to observe one of these atypical forms can advance our knowledge by a careful study and report of the case.

¹ Journal of Nervous and Mental Disease, March, 1900, p. 143.

² Ibid., 1899, p. 362.

THE STOMACH AND INTESTINES DURING AN EPILEPTIC ATTACK. Ossipow¹ has made some valuable experiments on dogs to determine the action of the stomach, intestines, and bladder during epileptic convulsions. He produced convulsions in these animals and studied the contractions of the viscera in the opened abdomen. He found that contractions of the stomach occurred in about 50 per cent. of the epileptic attacks, and that those of the small and large intestines and of the bladder were constant. The contractions of the small intestine began in about the middle of the clonic period; those of the large intestine began either in the tonic or clonic period, more commonly at the commencement of the clonic; and those of the bladder usually at the commencement of the tonic period. The contractions of the stomach, intestines, and bladder observed in the epileptic attacks produced by faradic irritation of the cortex were not the result of the local irritation of the cortical centres of the stomach, intestines, and bladder, but were the result of the epileptic attack that developed from the irritation of the motor area of the cortex and the centres contained within it. These contractions were aided by the asphyxia occurring during the epileptic convulsion and by the pressure of the diaphragm and abdominal wall. The discharge of urine and feces occurring frequently in epileptic convulsions is not difficult to understand in the light of these investigations.

THE RELATION OF THE CONVULSIONS OF CHILDHOOD TO EPILEPSY. It is well known that certain children show a tendency to convulsions, and these spasms are often attributed to teething. These "teething spasms" are probably in some cases the first manifestation of epilepsy, even though the convulsions may cease after two or three years and not reappear until the age of puberty or a little later. I have recently had a patient whose mother stated that convulsions occurred in infancy and were attributed to the presence of worms. When the child was four or five years old the convulsions ceased and did not return until the first menstrual period. On the fifth day after the first appearance of the menses an attack was observed which was in all probability truly epileptic. It seems probable to me that the convulsions in early childhood may also have been epileptic. A little more than a year ago I reported a case in which epileptic attacks began at the age of ten, although sclerosis of the motor cortex undoubtedly developed when the child was about two years old. The lesions in this case causing the epilepsy existed a number of years before epilepsy was recognized. The observations of Zappert² give us, possibly, another explanation for the convul-

¹ Deutsche Zeitschrift für Nervenheilkunde, vol. xv., Nos. 1 and 2, p. 94.

² Arbeiten aus dem Institut für Anatomie und Physiologie des Centralnervensystems. Obersteiner, 1899, No. 6.

sions of childhood. He has studied the spinal cord of children in many cases, and he finds that in children under two years of age the intramedullary portion of the anterior roots of the spinal cord, the fibres issuing from Clarke's columns, and the motor cranial nerves are frequently degenerated when the Marchi method is employed and the child has suffered from a severe disease of long duration. We are in doubt as to the full significance of these findings, and some even dispute their pathological value, but there is a possibility that a suitable ground for the development of the epileptic disease is prepared in this way.

Not infrequently I have obtained in epileptic children of more advanced years the history of early convulsions, in some cases even when a number of years free from all convulsions have intervened. I should hardly care to say, however, that convulsions in early childhood are always epileptic, although it is well known that epilepsy may begin very early in life. Dufour¹ has called attention to the epileptic nature of early convulsions, and P. Marie, in the discussion following the reading of his paper, acknowledged the frequency of infantile convulsions in epileptics, even in as high a proportion as 75 to 80 per cent., but he did not think these early convulsions are due to epilepsy. They are the effect of another cause, probably an infection, and this infection produces a lesion of the nerve centres, which in turn causes epilepsy later in life. I cannot see how any evidence can be offered for such a theory as this.

MIGRAINE AND EPILEPSY. Occasionally cases occur which show that there is probably some relation between migraine and epilepsy. I have reported² within the past year two cases in both of which temporary paræsthesia and paresis of one side and temporary disturbance of speech occurred. One patient had headache with these attacks; the other sometimes became unconscious. I cannot give in a brief digest the proper amount of space for the discussion of this relation between these two affections. Migraine, possibly, may change the structure of the cerebral vessels and render the brain liable to epilepsy, but I have not said that epilepsy and migraine are identical.

Migraine sometimes occurs with attacks of paralysis of ocular muscles, and this form has been called ophthalmoplegic migraine. Some of the German writers have described it under the name of "periodic or recurrent oculomotor paralysis." The latter designation is objectionable, as migraine is an important symptom of the disease, and at times muscles not supplied by the third nerve are involved. We had better, therefore, retain Charcot's name of ophthalmoplegic migraine. The exact

¹ *Revue Neurologique*, July 15, 1899, No. 13, p. 526.

² *American Journal of the Medical Sciences*, January, 1900, p. 24.

relation of the ophthalmoplegic form to ordinary migraine is unknown. Two cases of the former, one atypical, are reported by Paderstein.¹

Rennie² has observed *muscular hypotonia* in some cases of epilepsy as well as in neurasthenia. This hypotonia is by no means present in all cases of epilepsy, and does not equal in degree that seen in *tabes dorsalis*. In the cases recorded by Rennie the epilepsy had existed a long time, and fits had occurred very frequently, with no long interval of freedom from them. The patients all showed marked mental deterioration, and all were young.

Agrypnia, as a consequence of epilepsy, seems to be a rare symptom, or at least it has not often been noted. A curious case has been observed by Kalischer.³ The patient had previously had typical epileptic convulsions. At the time of observation he awoke after a few hours' sleep, on account of an attack which he experienced as a dream and which seemed to be purely of a subjective character. Convulsions were not observed. Abortive nocturnal attacks and dreams of epileptic patients similar to those just mentioned are said to have been described recently by Féré.

The heaviest brain on record belonged to an epileptic idiot of twenty-one years. It is reported now by van Walsen,⁴ in German, although an account of it was published about three years ago by van Walsen and Lemei, in Dutch. This brain weighed 2850 grammes, and yet nothing striking, macroscopically—aside from the large size—was found. A microscopical examination showed some alteration of the nerve cells; but the author does not express an opinion as to whether these peculiarities were sufficient to explain the idiocy. A large brain does not necessarily imply great intellect, for the structure of the nervous tissue may be very imperfect, even though the outward form of the cerebrum may be nearly or fully normal.

BROMIDE OF STRONTIUM. We hear much now about the use of bromide of strontium in epilepsy. Smith⁵ has found that there was only a very slight difference between the effects produced by the bromide of strontium and the bromide of potassium, though what difference there was was clearly in favor of the former as regards the absolute number of fits. The seizures of the patients when under the strontium salt were, in some instances, of a milder type than when the potassium salt was used, while the tendency to cause the appearance of a bromide rash was much less marked in the employment of bromide of strontium.

¹ Deutsche Zeitschrift für Nervenheilkunde, vol. xv., Nos. 5 and 6, p. 418.

² Lancet, July 15, 1899, p. 148.

³ Neurologisches Centralblatt, August 1, 1899, No. 15, p. 712.

⁴ Ibid., July 1, 1899, No. 13, p. 578.

⁵ Lancet, August 12, 1899, p. 411.

A larger dose of the bromide of strontium than of the bromide of potassium was required to control the fits, the largest amount of bromide of potassium required being an average dose of 20 grains, while it was necessary to give an average dose of 30 grains of bromide of strontium to produce the same result. The potassium salt seemed to act more quickly than the strontium, for after the former drug had been given for five weeks the seizures were under control, but it was not until the end of the seventh week that the same result was obtained from the strontium salt. The good effects of bromide of potassium seemed to be more lasting than those of the bromide of strontium. Bromide of potassium acts more rapidly, its effect is more lasting, the dose is smaller, the price is less, and, therefore, it is more generally useful, according to Smith.

Cerebral Rheumatism. The occurrence of convulsions, coma, hallucinations, etc., in acute articular rheumatism is made the subject of a paper by Francis P. Morgan.¹ He believes that cerebral rheumatism is not merely an expression of hyperpyrexia, although hyperpyrexia may cause symptoms much like those of cerebral rheumatism, as may also salicylic-acid poisoning. True cerebral rheumatism, he thinks, is probably due to some toxic substance in the blood which has more effect upon the cerebra of some persons than upon those of others. In the majority of cases no pathological changes were found in the brain or its membranes. The prognosis when these cerebral symptoms appear is bad. Morgan's theory seems very plausible, and he follows the fashion of explaining many diseases that we do not understand as the result of toxæmia. The physiological chemists are teaching us much regarding the action of various poisons upon the bodily tissues, and we eagerly grasp all they offer us, and sometimes, I fear, abuse this knowledge. I have heard organic nervous diseases, which are more probably the result of faulty development and early death of important tracts, explained as the result of toxæmia. There is a resemblance between the cerebral complications of acute rheumatism and those of typhoid fever, and in both diseases a satisfactory cause for these symptoms has usually not been found at the necropsy. Whether the cerebral symptoms are produced in a manner similar to that of the epileptic seizures is a question we cannot answer.

Hysteria. Even the man who makes the study of nervous diseases his life's work is often perplexed when the diagnosis between hysteria and organic disease must be made. I do not, of course, mean by this that hysteria is always a difficult disease to diagnosticate. I have seen almost complete anæsthesia of the hand give place to hyperæsthesia of

¹ Philadelphia Medical Journal, January 13, 1900, p. 116.

the part within a few moments by the suggestive use of electricity, and little doubt could exist in regard to the nature of the anæsthesia in such a case; but, again, I have seen a case which for twelve years had been an enigma to some of the most distinguished neurologists of the world, and a diagnosis between disseminated sclerosis and hysteria had not been made with certainty. We occasionally hear the statement that a given case was not one of hysteria because the symptoms had persisted for a long time. Fortunately the error of this teaching is being recognized widely. Hysteria may simulate closely organic disease; so closely that major operations are sometimes performed, and to the chagrin of the surgeon no organic disease is detected. The abdominal cavity is sewed up if it has been opened; the patient is not informed fully in regard to the examination, and the surgeon and physician do not know the cause of the trouble—and yet the case is one of hysteria.

I may refer to two cases reported by Sander¹ which illustrate my meaning. Both of these simulated intra-abdominal disease; the first presented more the symptoms of intestinal obstruction, the second more those of peritonitis resulting from perforation. I cannot go into all the details of the cases here, as that would consume too much space, but the symptoms were such as tympanites, variations in the pulse, vomiting, fever, and painful resistance in the ileo-cæcal region. One patient submitted to two operations, and the other to four, within a year, and no sufficient organic cause was found to explain the symptoms.

It is reports like these which help us in diagnosis. Most of us publish our successes and not our failures, though possibly we have less hesitation in reporting the failures of someone else. Even in the cases of Sander some of the features were atypical. Usually careful study in a hysterical case will reveal something unlike the symptoms of organic disease—some peculiar grouping of signs which may well lead us to look for the existence of a neurosis; but the wisest of us may be deceived, and the error of diagnosing an organic case as one of hysteria may be no less serious than that of diagnosing a case of hysteria as an organic affection. It is wiser to err in favor of organic disease and to avoid calling a doubtful case one of hysteria until all possibilities of organic disease are excluded.

HEMORRHAGE occurring without known cause in hysterical persons is always an interesting phenomenon, and is not more extraordinary than some of the other manifestations of hysteria. In the case reported by Toms² the hemorrhages were always from mucous membranes, never subcutaneous, and were at times as much as a pint in quantity, and came

¹ Deutsche med. Wochenschrift, 1899, No. 36, p. 588.

² Philadelphia Medical Journal, September 16, 1899, p. 530.

apparently from the mouth, throat, stomach, and ears. We should be prepared in such a case as this for the occurrence of a hemorrhage into the brain. There may be some relation between hysterical hemorrhage and the hemiplegia occurring in Raynaud's disease; the latter possibly from cerebral hemorrhage. Hysterical hemorrhage is not a new subject, but is one that baffles all attempts at explanation. I am not aware of any case of hysterical hemorrhage into the brain. It would be exceedingly difficult to pronounce a cerebral hemorrhage hysterical.

HYSTERIA OR EPILEPSY. Hysteria crops out often where least expected, and, on the other hand, some cases believed to be of an hysterical nature prove at the necropsy to be organic. Jacksonian epilepsy is regarded as of value in locating a focal cortical lesion, and usually the sign is of great clinical importance; but Jacksonian epilepsy may be a manifestation of hysteria. Crocq,¹ for example, reports such a case. A man had epileptiform convulsions beginning in the left leg and later becoming general. The patient did not foam at the mouth or have involuntary micturition during the attack. He complained of right-sided headache and tenderness to percussion over the right Rolandic region; and these signs, with the convulsions and a history of tuberculosis in the family, seemed to indicate the presence of a tuberculous lesion in the right motor cortex. The case seemed to be a suitable one for operation, but, fortunately, suggestion was first tried. Crocq spoke to his students, in the presence of the patient, of the value of a drug he intended to employ—nitrate of silver—and gave directions for its administration, with great attention to detail. The suggestion was successful, and the convulsions soon ceased. Crocq refers to a similar case reported by Raymond, but the diagnosis of hysteria seems to have depended on the failure to find any lesion during an operation upon the cranium and upon the improvement which followed this operation. Raymond had made the diagnosis of an organic lesion. We read quite frequently of improvement in epilepsy after trephining, and it would be somewhat hasty to conclude that the cases in which this occurs are merely cases of hysteria. The failure to find a tumor at the time of operation by no means proves that a tumor is not present, so that Raymond's case is not clearly shown to have been one of hysteria.

HYSTERICAL APOPLEXY. We may possibly have hysterical apoplexy resembling that caused by cerebral hemorrhage. Crocq² has reported a case which seems to illustrate this fact. By apoplexy he means a sudden loss of consciousness, of sensation, and of motion. A patient of his, an hysterical woman, was seized suddenly with an apo-

¹ *Journal de Neurologie*, August 20, 1899, p. 321.

² *Ibid.*, October 20, 1899, p. 410.

plectic attack, and the diagnosis of crossed paralysis from a pontile lesion was made. Within thirty-six hours contraction of the lower limb developed. I cannot decide from the report whether the limb of the paralyzed side or that of the sound side became contracted, and whether the position was one of flexion or extension. The most important diagnostic points in favor of hysteria were the recovery within ten days and the spastic condition of the face. Crocq believed that he could make a positive diagnosis of hysterical apoplexy in this case. I cannot from his report of the case feel so positive of the correctness of this diagnosis. It might be possible to have a small hemorrhage near, but not in, the inner capsule, with rapid recovery of the patient; or the apoplexy might be of toxic nature, such as has been reported with kidney disease. Another case of apoplexy is described by Crocq, in which no organic lesion was found at the necropsy. These may be cases of hysterical apoplexy, but we must be exceedingly careful in making such a diagnosis. Organic apoplexy may be associated with many hysterical phenomena, and the absence of lesions at a necropsy does not prove that the case was one of hysteria.

HYSTERICAL ANÆSTHESIA. Fry¹ has repeated Binet's experiments on an hysterical patient. He directed a girl who was completely anæsthetic on the right side to look at the wall and tell him what objects she saw there. He traced on the anæsthetic arm and forearm various simple geometric figures, and the girl saw them distinctly on the wall, and named them without hesitation. Other similar experiments were performed. This girl could not recognize in the ordinary way certain tactile impressions, but could interpret them by the visual function. The experiment was similar to that of transferring by suggestion an hysterical anæsthesia from one area to another, but was not parallel. Fry thinks that possibly by this test we may distinguish hysterical anæsthesia from organic. The subject is an interesting one and deserves further study.

We are indebted to Dejerine² for pointing out clearly the difference between organic and hysterical anæsthesia. The anæsthesia from a cerebral lesion is never as intense as it is in many cases of hysteria, and a definite relation exists between the degree of motor and sensory paralysis—*i. e.*, the limb most paralyzed is the most anæsthetic, and, therefore, in hemiplegia the upper limb is more anæsthetic than the lower, and the distal parts of the limb are more anæsthetic than the proximal. Such a condition has not been observed in hysteria. The organic hemiplegia does not take the form of a glove, sleeve, etc., nor

¹ Journal of Nervous and Mental Disease, 1899, p. 495.

² La Semaine Médicale, July 26, 1899, No. 32, p. 249.

is it affected by suggestion. Dejerine is speaking especially of anæsthesia of cerebral origin. We sometimes see the area of disturbed sensation in syringomyelia assuming the segmental form and varying in its extent from time to time. The hysterical anæsthesia does not produce the disturbance of function or the danger of injury caused by organic anæsthesia, and it is greater when the patient's attention is directed to the part, and is often associated with disturbance of the special senses. Hemianæsthesia from a lesion in the internal capsule is observed only when the thalamus is injured or more or less isolated by the lesion from the cerebral cortex. The lesion of the thalamus must be in the posterior and inferior part of the external nucleus of the thalamus. Dejerine believes that motion, general sensation, and the muscular sense have the same cortical localization. When the sensation returns in organic hemianæsthesia it returns first in the parts the least paralyzed.

THE OCULAR MANIFESTATIONS OF HYSTERIA are of great importance and worthy of careful study by oculists as well as neurologists. The subject has received a careful treatment by B. Sachs,¹ and as the paper is in English it is accessible to all. Sachs emphasizes the fact that hysteria is not simulation. To neurologists this seems almost unnecessary, but there can be no doubt that in the minds of many physicians the belief is firmly rooted that hysteria is very closely allied to simulation. The hysterical patient is often very desirous of being cured, and his affection is a very real one. We do not understand very fully the action of the higher centres over the lower in health, and we can hardly be expected to understand this action in diseased states. In hysteria we cure symptoms, but often the cure of the disease is beyond our powers. Physicians have always been skeptical toward the ocular manifestation of hysteria, because the movements of the ocular muscles are largely independent of the will, and yet the careful student of hysteria must come to the conclusion that these muscles, like many others of the body, may become paralyzed or spastic under the influence of hysteria. Sachs' paper, as well as the one by Casey Wood, should be read by those interested in ocular diseases. I would like to emphasize, as others have done, that organic disease may be associated with hysteria and the real condition hidden for a long time, and this possibility should always be present in the mind of everyone studying a case of hysteria; but the failure to recognize hysterical conditions has seemed to me almost more common than the failure to recognize organic disturbance.

Harlan² says he has met with only two cases of real hysterical blind-

¹ *Journal of Nervous and Mental Disease*, 1899, p. 329.

² *Ibid.*, April, 1900, p. 209.

ness; in all other cases of supposed hysterical blindness he has demonstrated that the blindness was not real. One of these two cases he reported very recently. He employs the prism test in examining these patients, and he believes that this test is absolute, as the turning of the macula to the fixing-point is practically a reflex act over which the subject has no control. This test only determines that the alleged blind eye has light perception, but does not determine the degree of visual power existing.

Hysterical patients sometimes love to deceive their caretakers, and resort to most extraordinary measures in the pursuit of this object. A patient observed by Eversmann¹ produced blisters on various parts of her body that might have passed for trophic lesions. The blisters developed only during the night. Most careful search failed to reveal any instrument with which such lesions could have been produced, until finally a piece of cloth covered with salve was found in the patient's pocket-book and removed secretly. The formation of vesicles at once ceased. An examination showed that the patient had employed a fly blister to produce the lesions.

LOCAL HYPERÆSTHESIA is one of the most valuable diagnostic signs in traumatic neurosis or other forms of hysteria, but the determination of this sign depends largely on the answers given by the patients. Where simulation is in question the sign as usually obtained is almost valueless. Von Bechterew² has devised a method which should be of service in enabling us to come to a correct conclusion regarding the existence of local hyperæsthesia. Pressure over a painful area in a case of traumatic neurosis, and in hysteria generally, should cause increase in the pulse-rate, enlargement of the pupil, vasomotor disturbances, as seen in flushing of the face, and rapid respiration. These are signs which the patient is not likely to be familiar with, and could hardly be feigned. The test is well worthy of careful trial.

CEREBRAL LOCALIZATION IN HYSTERIA. Interesting and astonishing statements regarding hysteria are made by Sollier.³ Hysterical disturbances, he says, are of cerebral origin, presumably cortical, and are subject to the same physiological laws as are organic disturbances having the same origin. He attempts to prove this by experimental and clinical observations in cases of monosymptomatic hysteria. Hysterical anorexia, mutism, or deafness, for example, are due to disturbance of certain parts of the brain. If hysterical anorexia with disturbance of cutaneous sensation in the epigastric region is found in the same patient, with a limited area upon the head, painful to pressure and anæsthetic to

¹ Münch. med. Wochenschrift, February 27, 1900.

² Neurologisches Centralblatt, 1900, No. 5, p. 205.

³ Revue Neurologique, February 15, 1900, p. 162.

touch, it may be concluded that the region of the brain subjacent to this area is the centre of the stomach. Sollier produced by hypnosis complete anæsthesia and flaccid paralysis of the right arm. He found an area of complete anæsthesia corresponding to the middle portion of the left Rolandic region—*i. e.*, to the centre for the right arm. When anæsthesia of the head is very intense pain is not present; and pain indicates incomplete abolition of function.

It is not necessary to repeat all the experimental and clinical observations of Sollier. If his statements stand the test of further study he has made important discoveries. He locates in the brain the centre for the stomach in the superior parietal lobe of each side, more especially of the left side; the centre for the heart a little in advance of the centre for the stomach; the centre for the bladder and rectum a little posterior to the centre for the stomach, and the centre for the larynx in about the foot of the third frontal convolution. It is to be hoped that Sollier's observations will be confirmed, and that we shall have a new method for cerebral localization. In a case of hysterical mutism I failed to find any change in sensation in any part of the scalp, although I cannot say that this was a case of monosymptomatic hysteria.

STEREOGNOSTIC SENSE. Dejerine does not accept the view of those who hold that the stereognostic sense is a special sense. Gasne has shown that in hysterical patients the stereognostic sense may be lost while all forms of sensations are preserved; but this does not prove that the stereognostic sense is a special sense. Dejerine also was able by suggestion to cause loss of the stereognostic sense with preservation of the different forms of sensation, and it is doubtless true that he would have been able in an hysterical subject to produce loss of this sense for certain objects only. These facts explain the peculiar condition observed and reported by Burr, to which I referred in my review of last year. Burr's case was one in which tactile sense was lost and stereognostic sense was preserved. Dejerine and Egger¹ have observed a case in which tactile, temperature, and pain sense were normal and stereognostic sense was lost, and this loss was due apparently to loss of the deep sensation.

HYSTERICAL APHASIA. Not very long ago aphasia in all its forms was believed to be always a sign of organic disease, and this teaching was supported by Charcot, although he acknowledged—as Raymond points out—that certain varieties of hysterical mutism might be considered as pure motor aphasia. Raymond² now reports two cases which he believes are instances of pure word-deafness of hysterical origin. Both

¹ *Revue Neurologique*, December 15, 1899, p. 891.

² *Ibid.*, July 15, 1899, No. 13, p. 509.

patients were young women and hysterical. In one the word-deafness seemed to depend on the fear of losing the hearing; in the other the removal from Italy to a land (France) whose language the patient did not understand acted as an auto-suggestion. By pure word-deafness we mean an inability to understand spoken words and to write on dictation, and this form of aphasia seems never before to have been observed as an hysterical phenomenon; indeed, the cases resulting from organic lesion are very rare. Raymond is such a careful observer that we can hardly doubt the correctness of the diagnosis; furthermore, the diagnosis was not challenged at the meeting of the Neurological Society of Paris, where the cases were presented. One of these women had had pure word-deafness for more than nine years. Neither patient could be hypnotized, and treatment, therefore, by this method failed. We may expect to hear more of hysterical aphasia now that attention has been directed to the subject, but I shall be much surprised if the cases become very numerous.

MORBID SLEEP is not a disease, but a symptom, and this has come to be quite generally recognized. It is seen in hysteria and other conditions. The cases reported by McCarthy¹ illustrate very well the truth of the statement. McCarthy is wise to refuse to follow in the footsteps of Gelineau and to accept narcolepsy as a distinct neurosis. It is questionable whether we should employ the name "narcolepsy" at all, as it has a tendency to cause confusion. A name like this suggests a distinct disease, and we convey a better idea of our understanding of the condition when we speak of it simply as morbid sleep. The term, however, has crept into the literature, and McCarthy employs it with a proper understanding of its significance.

CEDEMA OF NERVOUS ORIGIN is manifold in its manifestation and obscure in its mode of development. It is associated with a number of diseases, and is not a rare sign of hysteria. Schlesinger² has proposed to group all these forms of nervous œdema under the name hydrops hypostrophos. He has seen many cases, and speaks, therefore, from actual observation. The sudden appearance and sudden disappearance are peculiar to all forms of this œdema. The œdema is not inflammatory, and is not part of an organic disease of the thoracic or abdominal viscera. It may appear as hydrops articulorum intermittens; or as acute recurring œdema of the eyelids—not a rare location, according to Schlesinger, especially in Graves' disease—or possibly as an acute recurrent exophthalmos from swelling of the retrobulbar tissue; or as a swelling of the nasal mucous membrane, occasionally appearing with the

¹ American Journal of the Medical Sciences, February 1900, p. 178.

² Münch. med. Wochenschrift, August, 1899, No. 35, p. 1137.

menses ; or as acute swelling of the larynx, pharynx, soft palate, tongue, gums, and lips. The diagnosis is not always easy, for it is possible to overlook some local irritation. It is well, therefore, to be extremely cautious. With the œdema of the larynx, etc., there should be œdema of other parts of the body, and the swelling should have occurred repeatedly. Occasionally hemorrhage is found in the same tissue as the œdema. This œdema, when in the bronchial mucous membrane, may possibly be the cause of many varieties of nervous asthma ; it may also affect the gastric and intestinal mucous membranes, and it may appear in other forms, among which urticaria is to be included.

We enjoy reading this excellent clinical presentation of angioneurotic œdema by Schlesinger, but we look in vain for any satisfactory explanation of its real nature. It occurs often in neuropathic individuals, but I have seen extensive urticaria develop after a long tramp in the mountains in a person who could hardly be considered "nervous." It seems to be dependent on some condition of the bloodvessels and nerves, hence the name angioneurotic œdema ; but what nerves are affected and under what conditions are these vessels and nerves involved ? Is it the result of gastro-intestinal intoxication ? is the sympathetic system chiefly at fault ? is a poisonous effect produced on nerve cells of the spinal cord ? has the condition etiologically any relation to Raynaud's disease ? These are questions to which we have not found answers, and I fear we shall not soon. The œdema is transitory, and the cause producing this effect is probably also of short duration, and we look in vain for pathological conditions detectable by the microscope.

CUTANEOUS ŒDEMA. Charcot was able to produce the hysterical œdema by suggestion, and the extraordinary condition observed in a patient by Loewenfeld¹ seems to be related to this form of œdema. A woman, aged thirty-eight years, after exposure to cold air or cold water, suffered from redness, œdematous infiltration of the skin, burning, and itching. The face and hands were especially affected, but possibly other parts were involved, although the examination did not determine this fact. When the hands were placed in cold water they became red, and white spots soon appeared upon them. A cure of the disease of the hands was effected by means of electric hand baths. Loewenfeld was impressed by the resemblance of this condition to hysterical œdema ; but attacks of paroxysmal hæmoglobinuria after exposure to cold seemed to render some other explanation necessary. The tumefaction may have been the result of auto-suggestion, notwithstanding its relation to exposure to cold, and the remarkable benefit obtained by electricity does not lessen this possibility. By comparing this with hysterical œdema, however,

¹ Münch. med. Wochenschrift, July 4, 1899, No. 27, p. 888.

we do not explain it, for we do not in the least understand the hysterical œdema.

Asthenic Bulbar Paralysis. De Buck¹ has collected from the literature seventy-two cases of Strümpell's asthenic bulbar paralysis, and to these he adds one of his own. His patient had muscular paresis, a feeling of general fatigue, increased by movement or mental exertion, and atrophy with diminution of faradic contractility in the muscles of the scapular region and arms. The course of the disease was intermittent, with variations from day to day. Distinct disturbance of sensation, fibrillary contractions, and qualitative changes in the electrical reactions were not noticed. De Buck calls attention to the fact that muscular atrophy has been described in several cases of the syndrome of Erb, as this disease is also called. It is difficult to understand how pronounced muscular atrophy can result from a purely functional disturbance of the nervous system. De Buck refers to the fact that the symptom of fatigue after exertion has been regarded by Goldflam, Strümpell, and Jolly as pathognomonic of the syndrome of Erb; but he questions the correctness of this opinion. De Buck, like many others, attributes the disease to a toxic cause. This is the fashionable explanation at the present day for many obscure symptoms, and we are very much inclined to explain what we do not understand as the results of toxic substances. The reaction will probably come later, and we will be able then to discriminate better between causes of certain nervous diseases at present incomprehensible.

Asthenic bulbar paralysis is a rare disease, and has seldom been observed in this country; the case of Sinkler² and the one of Punton³ are, therefore, quite an enrichment of the literature. Sinkler's case was the more typical of the two, and I shall mention the chief symptoms, as the disease is unknown to many American practitioners of medicine. The patient, a woman, gradually developed ptosis in 1892, first in the left and then in the right lid. This ptosis remained for at least six weeks, when it gradually passed away. In 1895 she had a similar attack, and in 1897 she had a gradually progressing diplopia, with paresis of both internal rectus muscles and paresis of the superior rectus muscles. In 1898, except that there was occasional drooping in the lid of the left eye, nothing seemed wrong. After the birth of a child in December, 1898, her eyesight began to fail more rapidly, and a month later she could not swallow well. Her hands, arms, and legs began to lose power. The fatigue, with increase in the symptoms after exertion, was among the most characteristic signs.

¹ *Journal de Neurologie*, February 20, 1900, No. 4, p. 61.

² *Journal of Nervous and Mental Disease*, 1899, p. 536.

³ *Ibid.*, p. 545.

An interesting discussion on pseudoparalytic myasthenia was held at the meeting of the Berlin Society for Psychiatry and Nervous Diseases, November 13, 1899, and two cases were reported.¹ The relation of myasthenia to muscular dystrophy was pointed out by a number, and a case of Laquer was referred to, in which a patient with myasthenia developed muscular dystrophy. The relation was believed by many to be only an apparent one, and Jolly thought that a difficulty in diagnosis could exist only in the early stages of the disease, inasmuch as patients with muscular atrophy of slight degree may easily become fatigued. The myasthenic reaction was acknowledged by Remak to be absent in some cases, although Jolly said that he had found it in all the cases he had examined, though not at all times. The danger of sudden death from choking or failure of respiration from involvement of the respiratory muscles was also alluded to.

Bohden Korybutt-Daszkiewicz seems to have been the first to show that the nerve cell undergoes changes during its activity. His experiments were followed by those of Hodge, Vas, Lambert, G. Mann, Lugaro and others. The results obtained by these different investigators have not always been the same, but it seems that distinct changes do occur in the cell while it is functionally active, and that these changes may be detected by the means at our command. Joseph Luxenburg² is one of the most recent students of these cellular changes. He finds that the chromophilic substance becomes much altered during cellular activity. When the nerve cell is exhausted the cellular changes are very marked. It is not impossible—but not yet proven—that in such alterations as these we may have the pathology of neurasthenia, asthenic bulbar paralysis, etc.

Family Periodic Paralysis. E. W. Taylor's excellent paper has awakened a great interest in this country in family periodic paralysis. The disease, although rare, has been more familiar to the Europeans than to us; but Donath's³ case, recently reported, has unusual features. He obtained no history of a family form of the disease, and, remarkable to say, the attacks of paralysis in his patient began three days after a severe injury. This woman had never had any similar attacks previously. The attacks of paralysis lasted from half an hour to eight days, were numerous, and when severe even the head could not be moved. Electrical reactions were lost during the paralysis. Trauma seemed to be related in some way to these attacks, but we can hardly believe that it was more than a predisposing cause. Unfortunately, Donath can no more explain the real nature of the disease than can others who have written on this subject.

¹ *Neurologisches Centralblatt*, December 1, 1899, p. 1111.

² *Ibid.*, July 15, 1899, No. 14, p. 629.

³ *Wiener klin. Wochenschrift*, January 11, 1900, No. 2, p. 36.

This rare disease is the subject of a careful clinical study by J. K. Mitchell.¹ I have referred to his case in my digest of last year in *PROGRESSIVE MEDICINE*, and can do little more than allude to the paper as it appears with all the details carefully reported. These sudden attacks of severe paralysis have baffled all attempts at explanation, and we do well when we confess complete ignorance of their nature. Mitchell's careful study throws no light on the pathology of the affection, even though the urine and blood were examined. The tendency to transitory paralysis transmitted through several generations must have some organic foundation, but what that foundation is we do not know. Indeed, it is doubtful whether we may hope for much from a microscopical study of the tissues in a case of this disease. I greatly fear our best technique is not sufficient to unravel this mystery. The theory of the paralysis resulting from some poison seems a probable one, but we should not forget that this theory has little actual foundation.

Another case of the rare periodic family paralysis has been reported by J. J. Putnam.² Hitherto authors have sought to explain this malady as the result of toxæmia, but Putnam is inclined to accept a theory of inhibition, or, to use his own words, he believes that "the symptoms are probably due to the morbid overaction of an influence which, though hitherto but little recognized, probably plays an important part in all the operations of our lives, and which has been designated as inhibition." This view is worthy of attention, especially as it emanates from so excellent an authority; but for my part I am unable to see that it makes an understanding of the disease easier. We do not know what "inhibition" is, and in discussing it we are dealing with pure theories. Our views in regard to it have failed to explain all the phenomena of the knee-jerk, and there is perhaps more doubt at present as to the correct explanation of these phenomena than there has been at any time since the knee-jerk was first recognized. If we accept excessive "inhibition" as the cause of the family periodic paralysis we are called upon to answer unanswerable questions. Why is the "inhibition" excessive? why is one family liable to the manifestations of excessive "inhibition?" why is the heart—an organ well supplied with inhibitory fibres—not equally affected in the disease? etc. Putnam's views, however, should receive attention, and we will wait with interest the reception they will meet.

Cases of spinal paralysis with complete recovery are not common. Paralysis followed by recovery is usually due to neuritis and not to myelitis, and yet Krewer³ reports two cases in which disturbance of motion and sensation developed suddenly, without known cause. The

¹ American Journal of the Medical Sciences, November, 1899, p. 513.

² Ibid., February, 1900, p. 160.

³ Zeitschrift für klin. Med., vol. xxxix., Nos. 1 and 2, p. 93.

patellar reflexes were exaggerated. Muscular twitchings in the legs and disturbance of the rectal and vesical functions were observed, but there were no trophic disturbances. In one case sensation was greatly impaired, but not in the other. Recovery was gradual, but complete. These were believed by Krewer to be cases of spinal paralysis resulting from closure of spinal arteries. It would be well, I think, to reserve an opinion in regard to the nature of such cases. I have examined recently the spinal cord and peripheral nerves in a case in which the symptoms indicated with great probability disease of the spinal cord and not of the peripheral nerves, and yet I have found the latter greatly diseased and the former almost or fully normal. In the absence of a necropsy in any case of organic nervous disease a diagnosis should not be too positive. I have had too many surprises from the microscope to permit me to accept without reserve the spinal origin of these cases of so-called "transitory spinal paralysis," which are quite different from the family periodic paralysis.

Paralysis Agitans. Paralysis agitans may be simulated so closely by hysteria that the diagnosis may be exceedingly difficult; such a case has come under Krafft-Ebing's¹ observation. The tremor was like that of paralysis agitans, but because it began simultaneously in both upper extremities, and later in both lower extremities; because of the absence of muscular rigidity and of muscular weakness, although the disease had lasted twenty-three years; because of the absence of the typical position, and because of the diminution in the intensity of the deep reflexes, especially of the knee-jerk, Krafft-Ebing regarded the case as one of hysteria. It is well known that Krafft-Ebing believes that the knee-jerks are exaggerated in Parkinson's disease, but it may occasion some surprise to learn that diminution of these reflexes, in connection with the other atypical features mentioned, was sufficient for a diagnosis of hysteria. C. K. Mills and I have had under observation for at least a year or two a case with unmistakable signs of hysteria, and yet we have never been able to say positively whether paralysis agitans was present or not in addition to the hysteria. Functional disturbances occasionally resemble one another so closely that sharp distinctions cannot be made. The cases occurring in actual practice are not always what the Germans call "school cases."

An uncomplicated case of Parkinson's disease is reported by Philipp.² The spinal cord presented no changes that could in any way explain the disease, but the motor cells of the paracentral lobule were considerably affected. Philipp is inclined to attribute the cause of this malady to cerebral lesions, but we need more evidence before we can accept these

¹ Deutsche Zeitschrift für Nervenheilkunde, vol. xvi., Nos. 5 and 6, p. 492.

² Ibid., vol. xiv., Nos. 5 and 6.

views as indisputable. Immediately following this paper is one by Frenkel,¹ in which very opposite views are expressed.

Little attention has been paid to the condition of the skin in Parkinson's disease. Frenkel (Switzerland) says that thickening of the skin is not at all uncommon, and may be so great that the skin cannot be raised in a fold between the fingers in places where usually this is easily done—for example, over the back. The subcutaneous tissue is probably also affected. No microscopical study of the skin in this disease has been made. Frenkel believes that some of the subjective and objective symptoms of paralysis agitans may be explained by the changes in the skin, and that the disease is probably not one of the central nervous system.

Another interesting case of paralysis agitans is reported by Dana.² In this case, as well as in the later one reported by Gordinier,³ the nerve cells were found diseased. Further study of these cells in paralysis agitans by the method of Nissl is much needed. The fatty changes in the muscular fibres in Dana's case is an interesting finding. This alteration is of such a positive character that when present it can be easily detected. I have found it in a case of lost knee-jerk with presence of ankle-clonus, reported by C. K. Mills, and I have also some of the preparations of the case described by Obersteiner. It has never been observed previously, as Dana says, in paralysis agitans, and attention should be directed to the muscles in all cases of this malady. This fatty change in muscles is not accepted by all neuropathologists as a sign of great value, and recently in two or three papers some doubt has been thrown upon its importance. It must be remembered that in Dana's case sarcomata were present, and there is a possibility that the alteration of the muscle was caused by some toxic substance from these growths. Dana shows how paralysis agitans differs from senility, and, according to him, there is probably a relationship between paralysis agitans and that form of rheumatic affection known as rheumatoid arthritis.

Gordinier believes that a careful review of the pathological changes found in the cases of Parkinson's disease, with necropsy, will convince the most skeptical that paralysis agitans has a distinct pathological basis. I fear that I cannot share this opinion, as I have examined some of Redlich's preparations and preparations from other cases, and am by no means convinced that the disease has a pathology which has been detected, or that the findings differ essentially from those of senility. The changes, according to Gordinier, differ from those of senility in intensity, in the presence of typical patches of perivascular sclerosis, and in the absence usually of general arterio-sclerosis. Greater intensity of the process in paralysis agitans has not been positively demonstrated;

¹ Deutsche Zeitschrift für Nervenheilkunde, vol. xvi., Nos. 5 and 6, p. 492.

² American Journal of the Medical Sciences, November, 1899, p. 503.

³ Ibid., December, 1899, p. 648.

patches of sclerosis occur in senility, and arterio-sclerosis is not a rare finding in the spinal vessels of the aged. Parkinson's disease has recently been described as a cerebral affection (Philipp), and, in part at least, as a cutaneous malady (Frenkel). To these papers I have already referred. We must not ignore the fact that many neuropathologists in full knowledge of the findings in the published cases of paralysis agitans with necropsy are cautious in accepting these findings as an explanation for the disease.

Charcot is said to have been the first to recognize trauma as a cause of paralysis agitans. The cases in which such a relation seemed probable are not numerous, and Linow's¹ case adds one more to the small number. The only proof that can be offered for trauma as a cause is the old argument, *post hoc ergo propter hoc*, and to many this is not sufficient. We do not in the least understand how trauma causes a disease like paralysis agitans; but then we do not know in what way fright works in producing this disease. Linow is inclined to accept the theory of Charcot and Hitzig for his case, according to which an ascending neuritis leads to spinal changes. Let us first be sure that neuritis may ascend to the spinal cord and involve it secondarily before we accept such a theory for paralysis agitans. We are groping in the dark when we seek to prove that trauma causes Parkinson's disease, and the most we can say is that in a comparatively small number of cases it seems to stand in etiological relation.

Senile Changes in the Spinal Cord. We see in the aged certain symptoms that indicate some change in the spinal cord. Marinesco has recently shown that in the aged the nerve cells become altered, and Sander² has made the senile changes of the spinal cord a subject of special study. The spastic gait, the alterations of sensation, the loss of the knee-jerk, the vesical and rectal disturbances, are symptoms seen at times in the aged, and must be the expression of an organic change. Sander finds a general, but often slight, loss of nerve fibres of the cord—which is sometimes more marked at the periphery—and proliferation of the glia, as the results of senility. There is a gradual death of the tissues of the body, and it is not confined to the nervous system. The changes produced by arterio-sclerosis are somewhat different from those described as the result of senility. In the former the large vessels of the cord are sclerotic and cause foci of degeneration, which unite and produce secondary ascending and descending degeneration. These findings resemble those of syphilitic myelitis, and may occur with evidences of slight inflammation.

Arterio-sclerosis and Spinal Degeneration. We hear occasionally that degenerative changes have been found within the spinal cord in cases of nephritis, and we are inclined to regard them as the effect of

¹ Berliner klin. Wochenschrift, October 30, 1899, No. 44, p. 962.

² Centralblatt für Nervenheilkunde und Psychiatrie, October, 1899, p. 594.

some poison—what poison, no one knows. The possibility of a toxic origin in these cases cannot be denied, but even more probable is the causation through arterio-sclerosis. The two cases of spinal degeneration reported by Henneberg¹ are evidence of the truth of this statement. Henneberg believed that the arterio-sclerosis was the connecting link between the degeneration within the spinal cord and the nephritis in his cases, and in the discussion following the reading of his paper he received the support of Oppenheim and Goldscheider. We are so eager to attribute almost every pathological change to some poison that we are in some danger of overlooking simple mechanical causes.

Chorea. From a study of 100 cases of Sydenham's chorea, Collins and Abrahamson² find that the average age of the patients at the time of the first attack was 8.96 years; that 41 were males and 59 females; that 17 per cent. were foreign-born and 25 per cent. of foreign extraction. The greatest number of cases occurred in July. In the immediate and collateral ancestors 22 per cent. were neuropathic, 19 per cent. rheumatic, 14 per cent. choreic, 1 per cent. cardiovascular, and 4 per cent. tuberculous. The cases showed that a definite relationship exists between rheumatic dyscrasia and chorea, and that psychical trauma is the great exciting cause of the disease. Especially interesting, and contrary to the views of many, is the existence of mental symptoms in many cases—54 cases, or more than half of those examined. This is certainly very noteworthy. In many respects the results obtained by these investigators resemble closely those of Krafft-Ebing,³ obtained from a study of 200 cases of Sydenham's chorea.

A singular observation has been made by Witthauer.⁴ In two cases of chorea, one resembling more hysterical chorea and the other the "rheumatic form," the convulsive movements became at once less severe after the beginning of a fever. He is unable to explain the manner in which fever influences chorea, and *a priori* we should expect fever to increase the movements by increasing the irritability of the cerebral cortex. The observation is an interesting one, and should demand the attention of clinicians. The case of chorea reported by Werner⁵ is an unusual one. In this the movements were excessive and persisted in sleep, and hallucinations—always uncommon in chorea—were present. The central nervous system and peripheral nerves were normal.

Acromegaly. Acromegaly is now well known, and, according to Leszynsky, about 140 cases have been put on record. In the case which Leszynsky⁶ reports some interesting details are mentioned. In

¹ Centralblatt für Nervenheilkunde und Psychiatrie, June, 1899, p. 328.

² Philadelphia Medical Journal, February 24, 1900, p. 455.

³ Wiener klin. Woch., October 26, 1899, p. 1059.

⁴ Münch. med. Woch., Dec. 26, 1899, p. 1765. ⁵ Ibid., August 29, 1899, p. 1149.

⁶ Philadelphia Medical Journal, October 7, 1899, p. 661.

the left eye there was incomplete temporal hemianopsia for white, marked concentric contraction and temporal hemianopsia for red, and almost complete loss for green. In the right eye the field for white was normal, while the fields for red and green showed a contraction on the nasal side and a temporal hemianopsic defect. This condition, with the anosmia, was evidence that the hypophysis was diseased. However, hemianopsia does not always occur. It has never been detected in a patient with acromegaly who visits my clinic—a case reported by A. F. Witmer—although it has been searched for repeatedly. This patient has not been much benefited by any treatment, although thyroid gland, pituitary gland, and various drugs have been administered. In fact, we seem utterly powerless to arrest the disease when it once begins, and it usually progresses until the great deformities are produced or death occurs; but in some cases many of the typical signs are absent.

Acromegaly has occasionally been found associated with Raynaud's disease, and Boettiger¹ has observed a case of this kind. We do not know what relation these two diseases bear to one another, inasmuch as we do not know the pathology of either. Many still refuse to believe that disease of the hypophysis is the cause of acromegaly, and we are entirely ignorant of the pathology of Raynaud's disease.

Thomsen's Disease. A number of cases of Thomsen's disease associated with other affections have been reported, and usually the conditions have been regarded as independent processes in the same person. Schoenborn's² case of Thomsen's disease was associated with an atypical atrophy, and he believed that some alteration of the motor spinal nerve cells would best explain both conditions. We are groping in the dark when we seek such an explanation as this. The possibility of atypical muscular atrophy being a part of myotonia congenita cannot be gainsaid, but it cannot be proved or even rendered very probable. We have no proof whatever that Thomsen's disease is due to a spinal alteration, and we have no proof that atrophy is ever a part of this affection. To my mind it is much more reasonable to believe that two distinct affections were associated in Schoenborn's case.

In closing this chapter I desire to call attention to a valuable book on the treatment of nervous diseases which has been given to the profession by Collins.³ It is a work that will be much consulted, and will be of value to the postgraduate as well as undergraduate student. No one part can be selected for criticism. It is a book of 591 pages, and is written in a forcible style. It may be called thoroughly "practical."

¹ Münch. med. Wochenschrift, December 19, 1899, p. 1733.

² Deutsche Zeitschrift für Nervenheilkunde, vol. xv., Nos. 3 and 4, p. 274.

³ The Treatment of Diseases of the Nervous System. By Joseph Collins, M.D. William Wood & Co., N. Y.

OBSTETRICS.

BY RICHARD C. NORRIS, M.D.

WHEN we pause for a moment at the threshold of a new century and consider the height to which the science and art of obstetrics has attained, it seems scarcely credible that less than one hundred and fifty years ago the first professorship in this vitally important branch had yet to be established. No systematic obstetric instruction at that time had ever been given to the candidates for medical degrees, and people of all classes were attended only by midwives, who were entirely devoid of all knowledge of the mechanism of labor, whose aseptic technique was such as would horrify the obstetric surgeon of the present day, and whose mortality was often something frightful to contemplate.

The growth of obstetric science during this period has been truly remarkable. Our knowledge on this subject has been particularly marked by distinct periods of rapid development.

Bacteriology has revolutionized obstetrics, as it has surgery, and operative procedures are now readily and successfully accomplished which a few decades ago were absolutely impossible.

What women may be made to endure in those countries where the light of obstetric science has not yet been carried may be well seen from the graphic and interesting account of "Parturition Among the Eskimos," given by C. C. Gleaves,¹ who had an opportunity to witness the confinement of an Eskimo woman while spending the winter in northwestern Alaska as surgeon on the United States steamer "Bear." This was very unusual, as custom demands that no one be allowed to be present on such occasions. The woman may not be confined in an "igloo," or house, but must go away alone into the woods or brush, and remain there five days after the birth of the child, with no food except a piece of dried fish; then she returns to her home, and she and her husband take a bath and change their undergarments (if they possess a change), and she is considered clean until her next confinement.

One night in January, 1899, with the mercury ranging from 30° to 40° below zero, a messenger brought word that a woman, whose family the writer had treated for illness and otherwise befriended, was about to be confined. She was out in the brush in a snow pit, oval in shape,

¹ Pacific Medical Journal, December, 1899.

about two feet deep, which the woman had prepared for herself by scattering a thin layer of dried grass, over which was laid a reindeer skin. The woman was on her knees, with buttocks resting on her heels, the labor pains rapid and severe. Labor progressed naturally through the second stage, and in half an hour the pains returned; the woman had syncope, probably from hemorrhage, but soon rallied and expelled the placenta; then taking a piece of sinew, previously prepared from the hock of a caribou, she ligated the cord as close to the umbilicus as possible, and severed the cord close to the ligature with a piece of serrated flint. Then, despite the lusty kicking and squealing of the child, it was vigorously washed in the snow and placed underneath the folds of the mother's skin garment; then, in a bent-over position and leaning on a staff for support, slowly and laboriously the woman proceeded to another snow pit about fifty feet away, leaving a trail of blood behind her on the snow. It is considered unclean to remain any length of time at the place where the child was born. Notwithstanding the rigorous conditions surrounding the Eskimo mother in childbirth, the rate of mortality for both mother and babe compare favorably with the death-rate in more civilized communities.

PREGNANCY AND LABOR.

The Early Diagnosis of Pregnancy. At a recent meeting of the Obstetrical Society of Vienna, Braun¹ called attention to a sign of early pregnancy which he has found of great use in making the diagnosis. As is usually the case, he laid stress upon the presence of colostrum in the breast and in changes in the color of the genital canal. The sign which he has found especially important consisted in unilateral development of the uterus, whereby upon examination one-half of the womb is felt larger than the other, especially near the cornu, while a sulcus can be distinctly felt running lengthwise between the two portions.

In the discussion Schauta mentioned cases in which the ovum had lodged in one cornu of the uterus, which simulated ectopic gestation. In these patients the tumor was considerable in size and exactly the consistency found in extra-uterine pregnancy.

Radiography of the Pregnant Uterus. Numerous attempts have been made to secure an outline of the *foetus in utero* by the Röntgen rays. Some years ago an experimenter succeeded in obtaining a tracing of the cranium and skeleton of a living child in the womb of its mother in the ninth month of pregnancy. A clear outline, however, was difficult at that time to obtain.

¹ Centralblatt für Gynäkologie, 1899, No. 17.

In *Annales de Gynecologie*, April, 1899, Varnier calls attention to his report, made at the Congress in Moscow, and to further experiments upon the cadaver, which he has carried on with the Röntgen rays. Dim outlines were obtained upon the living pregnant patient, but no clear picture. Recently, by lengthening the time of exposure, Varnier was able to secure an outline of the contour of the foetal head, and also to determine whether or not it had entered the pelvis, and to obtain an idea of its volume, of its position, and of the degree of flexion and engagement. When these pictures were made with the mother in the dorsal position no tracing was obtained of the vertebral column of the mother or of the foetal limbs. This at present seems to be the extent to which this method of diagnosis is applicable in the study of obstetrics.

Bade¹ gives the results of the examination of ten specimens to determine the length and development of the foetus at different periods of gestation. The Röntgen rays were used to determine the presence or absence of bone. The period of development of these specimens varied from eight to ten weeks.

The first specimen was but 3 cm. long and weighed 2 grammes, and there was no trace of bony tissue on using the Röntgen rays. The second specimen was 3.4 cm. long; here faint shadows were obtained of the cranium, the upper and lower jaw, the clavicle, the upper extremities of the humerus, radius, and ulna, the lower extremities of the thighs, and some of the first ribs. In the third and fourth specimens the same portions of the skeleton were found as in the second. This was a case of twin embryos, and in addition traces of the vertebræ could be observed. The fifth was 7.1 cm. long, and showed less signs of ossification than in the preceding. The sixth was 9 cm. long, and the formation of bone was far advanced, especially in the fingers and skull. Faint traces of the bones of the ears could be seen. The seventh, eighth, and ninth, whose lengths were greater by 1 cm., showed formation of bone in the pelvic bones and a better development of the shafts of the long bones. The tenth specimen was 14 cm. long, and gave shadows of all the skeleton except the third, fourth, and fifth tarsal phalanges, and was also remarkable for the narrowness of the bodies of the vertebræ.

H. Varnier has found by experiments upon a number of pregnant living women and cadavers that radiographs can be made to show the head of the foetus at the pelvic inlet at any time after six and a half months. Such a radiograph allows determination of the size, position, degree of flexion, and engagement of the foetal head. In each case the length of exposure must depend upon the individual tube employed. A

¹ Centralblatt für Gynäkologie, 1899, No. 34.

short exposure shows only the maternal pelvis, while one of longer duration brings out the outlines of the fœtal skull. In radiographs so obtained in the position of dorsal decubitis, with the plate beneath the patient, neither the vertebral column nor the extremities of the fœtus is visible.

Albert¹ recently demonstrated to the Gynecological Society of Dresden his method of obtaining a tracing of the brim of the pelvis and the position of the child by the use of the Röntgen rays. He obtained the best results in examining the superior plane of the pelvis, and was successful in diagnosing flattened pelves. In one of his cases the patient laid flat upon the back, and in others assumed a partially sitting posture. He was enabled by these means to obtain a measurement of the upper portion of the pelvis, which gave a good indication of its capacity. He exhibited diagrams illustrating these researches, and called attention to the difficulties arising from the fact that the shadow of the promontory of the sacrum became confused with that of the symphysis; but from three to four minutes' exposure to the action of the rays were required. He also exhibited pictures of the fœtus in the fifth, sixth, eighth, and tenth months of development.

Bouchacourt² is pessimistic as to the practical value of the X-ray in obstetric practice, and sums up all the work done to date in the direction of radiography and recapitulates the various findings of Varnier, Mullerheim and others. The writer concludes that nothing as yet elicited has any clinical significance. In thin women we may sometimes see the head in the excavation, or a bit of the skeleton in the abdomen, but we derive no information over and above that which may be acquired by ordinary methods of diagnosis.

Of possible causes for these negative results the author enumerates: (1) Amniotic fluid; (2) blood circulating in the placenta and uterine wall; (3) respiratory and other muscular movements in the mother; (4) movements of the fœtus; (5) opacity of maternal bones; (6) inequality in the approximation of the sensitive plate to the various portions of the uterus, etc.

While certain investigators have met with very encouraging success in these experiments, certain it is that it cannot yet be that radiography has come to occupy a position of any general practical application in obstetric practice.

The Treatment of Labor in Abnormal Pelves. Davis,³ at a meeting of the Gynecological and Obstetrical Society of Baltimore, March 14, 1899, spoke particularly in reference to the diagnosis of abnormali-

¹ Centralblatt für Gynäkologie, 1899, No. 15.

² L'Obstetrique, March, 1900.

³ Maryland Medical Journal, April 1, 1899.

ties of the pelvis by pelvimetry, palpation, and vaginal examination. It is not the question of the absolute size of the pelvis, and too much stress should not be laid upon the actual measurements in inches and centimetres of the pelvis. Rather should we take into account whether this particular child can be born through this particular pelvis, and this can best be determined by palpation. If necessary an anæsthetic must be used and particular attention paid to the engagement of the presenting parts. Nature effects delivery in contracted pelves, especially if the woman is young and healthy, by the force of the contraction of the abdominal and uterine muscles bringing on a premature delivery. Hence, acting along this line, the kneeling posture is the best one to be assumed. Labor may be induced at the eighth month if the head enters the pelvis and descent begins.

OBSERVATIONS ON PELVIC NARROWING. Vallois¹ says that the obstetrician is likely to be confronted with cases of narrow pelvis at term in which the opportunity of inducing early labor has been forfeited. Symphysiotomy is then proposed, and is promptly declined by the patient or her family. What is to be done? Should one operate secretly, as it were? Opinions of authorities will probably differ here; but, of course, there can be no alternative for a conservative obstetrician. He must absolutely respect the wishes of those most concerned, and seek the way out which in the individual case appears to promise best for the mother and child.

Vallois cites three such cases from his practice. In the first two, high forceps and version being of no avail, basiotripsy was performed. In the third case the child was delivered (dead) by the manœuvre of Champetiere de Ribes.

ARTIFICIAL DILATATION OF THE CERVIX. Farier² has published a monograph on the subject of artificial dilatation of the cervix in primiparæ, which is summarized as follows:

Electricity, chloroform, chloral, and Tarnier's dilator should be rejected in normal labor as dangerous to the mother.

Hot-water injections (vaginal or intra-uterine), quinine, and balloons are either inert or inconvenient.

Manual dilatation is a procedure of necessity, never of choice.

Lactose in doses of six or seven drachms, divided into two parts, has sometimes given good results, but it is not to be depended on.

Bilateral incisions of the cervix to a depth of one-fifth of an inch each at the beginning of dilatation are always efficacious and harmless and easy to perform.

¹ *L'Obstetrique*, March 15, 1899.

² *Le Moir Medico-chirurgical*, May, 1899.

EARLY DISTINCTION BETWEEN MALE AND FEMALE PELVES. In the London letter to the *New York Medical Journal*, August, 1899, upon the male and female pelves, the writer holds that differences in the conformation of the sexes are marked at an early period of development, and no doubt exist earlier than they have been traced; and yet it has quite commonly been thought that the differences in the pelves do not become manifest until the age of puberty. If so it would be an anomaly, for the sexes are clearly enough differentiated in other anatomical respects. Even that most careful doctor, Mathews Duncan, seems to have been led somewhat astray by the curious notion that the pelvic differences are established at puberty, and suggested, in explanation, that the bones in the male are thicker and stronger as well as earlier consolidated. Prof. Arthur Thompson, of Oxford University, has brought this question before the Obstetrical Society in a paper which is published in full in the *Journal of Anatomy and Physiology*. He assigns to Fehling the credit of discovering that the differences in form and appearance are such as to enable the observer to distinguish the male and female pelvis as early as the third month of fetal life. Professor Thompson's careful researches corroborate this, and by means of specimens, diagrams, and lantern-slides he demonstrated the differences to the satisfaction of his audience.

The Embedding of the Human Ovum, and the Anatomy and Early Development of the Placenta. Dr. H. Peters,¹ instructor in gynecology and obstetrics in the University of Vienna, has given us an exceedingly valuable monograph of 140 pages and fourteen magnificent lithographic plates illustrating the microscopical condition upon the embedding of the human ovum. Peters was fortunate in receiving in perfect condition the earliest ovum ever obtained. The writer has worked up the case with the greatest care and scientific accuracy, and has obtained as a result of his study a finding which must materially modify the views which have been previously held upon this subject.

The specimen which furnishes the subject for the study was from a young waitress, who committed suicide by taking carbolic acid exactly one month after her last normal menstruation because her period did not appear on time and she believed herself to be pregnant. At the autopsy, which was performed within a few hours after death, a small protuberance about the size of a pea was found in the posterior uterine wall, near the fundus, which contained the embryo.

This portion was excised with care, fixed, hardened, and examined microscopically, with serial sections passing through the entire mass and the adjacent portion of the normal uterine tissue. Peters was thus

¹ Die Einbettung des menschlichen Eies, Vienna, 1899.

able to study the process of embedding and all the histological changes which had occurred in the surrounding maternal structures up to that time. While the exact age of the ovum cannot be positively given, it probably cannot be more than two or three days old. The famous seven or eight days' old ovum of Leopold measured within the capsule 4×3.7 mm., while that of Peters measured but $0.6 \times 0.8 \times 0.9$ mm., and is accepted by the German scientists as the earliest impregnated ovum on record.

A careful study is made in the article of the decidua, the trophoblasts, the method of embedding in the mucous membrane, the binding together of foetal and maternal structures, the syncytium, and a consideration of the placenta formation in the lower animals. But the part which interests us most and furnishes the most valuable study is that relative to the method of embedding and the part played by the syncytium in forming the intervillous spaces and in opening up the blood-vessels. Up to this time it has been universally taught that the impregnated ovum entered the uterine cavity, rested, and finally remained fixed to some point, whereupon folds of mucous membrane extended over it from either side and became fused together, thus forming a cap or sac, enclosing it, which has been called the "decidua reflexa."

Peters' specimen shows, however, that no such formation of the reflexa occurs. The ovum attaches itself to a point where there is a break in the epithelium or a separation between the epithelial cells. It then sinks into the congested and hypertrophic mucous membrane until the outer shell of the ovum is about on a plane with the superficial layers of epithelial cells on the surface of the endometrium. The opening through which the ovum has passed is then capped over by a blood capsule, or fibrinous clot, which is attached in a thin band to the outer surface of the ovum, and extends over the adjacent mucous membrane surface like a hood. Peters has further shown that development of the future placenta begins to take place immediately. The syncytial cells upon the surface of the chorion, upon all sides of the ovum, begin at once to proliferate rapidly, and there is formed about the ovum in an exceedingly short space of time a zone of trophoblasts and syncytium.

The syncytial cells have, as Peters shows, a phagocytic property, as it were, attack the connective-tissue cells and replace the loose connective tissue, thus forming rooms and spaces. The stroma tissue is thus invaded until a capillary is reached, when the endothelial cells forming the walls of the vessel are attacked by the syncytium in the same way, and the vessel opened, this allowing the blood to escape freely into the spaces already formed and to come into immediate contact with the surface of the chorion and the developing villi. These spaces become later on the intervillous spaces of the fully developed placenta. The

ovum is thus seen to be nourished by the maternal blood from the earliest days in much the same way as later, when the ovum has grown out into the cavity of the uterus and the placenta has been fully formed.

Complying with the request of Peters, that other ova of a very early date be again studied to ascertain if the facts gained from this early case can be substantiated in others, Leopold¹ has reviewed, with the help of Bott and Marchesi, the specimens from his seven to eight-day ovum, and also made a study of five other cases of a very early date, and given us an important article on "The Development and Structure of the Human Placenta."

In the preface of the article he states that while the anatomical structure of the fully developed placenta is well and thoroughly understood, the method of embedding of the human ovum and its first "anlage" was never fully understood until now. In Leopold's cases Bott and Marchesi have studied only the serotina in cases under two months, since it is from this portion that the placenta develops and in which the first changes in the uterine tissue begin.

The decidua vera is divided into three layers: (1) The outer compact layer; (2) the loose ampullary layer; (3) the border layer (of His), containing the terminal ends of the glands.

In studying the reflexa Leopold has given special attention to his seven to eight-day ovum, previously described in his book on *Uterus und Kind*, to see if the newly advanced claims of Peters, that the so-called "decidua reflexa" was in reality made of fibrin from the blood-clot which formed over the opening through which the ovum had penetrated the mucous membrane, and not of a fold of decidua, could be substantiated from his specimens. Leopold finds on the summit of the cap of his ovum also a deposit of fibrin, which leads him to think that in his case also the point of closure was cemented by a blood-clot. While still rather adhering to his earlier description that his seven to eight-day ovum lay *upon* the decidua, not *in* it, he is, nevertheless, forced to admit that, as Werth claims, it may be that the ovum has actually penetrated the mucous membrane, as in the case of Peters; for more than two-thirds of the ovum lies beneath the level of the surface of the mucous membrane, and no glands open upon the surface of the tissue immediately in contact with the inner covering of the ovum.

Count Spee, who has conducted a series of experiments on guinea-pigs and found that the ovum of the guinea-pig embeds itself in the mucous membrane, as described by Peters, has made a careful study of Leopold's sections, and has come to the conclusion that the same process of embedding is present in the human subject as in the guinea-pig.

¹ Arch. für Gynäk., Band i., Heft 2, 1899.

In the capsule covering, or reflexa, of the early ovum of Peters no decidual cells whatever can be found, the tissue being composed entirely of organized fibrin; but in the older ovum of Leopold decidual cells can be found making their way in from the sides. The finding of Leopold on this point is a virtual support of Peters, though he states that there may be a varying method of implantation which will greatly simplify the explanation. Leopold agrees, as do Hofmierz and Hevkelom, that the syncytial cells penetrate to and loosen up the endothelial cells lining the walls of the capillaries, which then allows the blood-pressure from within the capillaries to force an opening and allows the blood to escape into the spaces between and around the villi.

Leopold finds that the venous capillaries carrying the blood away from the intervillous spaces are less in number than the arterioles. This he explains by the fact that the point at which the capillaries are usually opened is just where an afferent arteriole is opened into an efferent venous radical. When the arteriole is opened the blood is allowed to escape into the intervillous spaces, and pressure is at once removed from the efferent venous radical. In this way many of the venioles are obliterated. To compensate for this, however, the veins which remain are considerably enlarged, so that the return flow of the blood-current is not impeded.

The subject of the early development of the human placenta is of great scientific interest, and has been a theme of much controversy and discussion.

The Management of Pregnancy and Labor. Landesman gives us in outline the treatment followed in the management of pregnancy and labor in the clinic of Prof. Schauta, in the Vienna Clinic, which is as follows:

FOR HYPERÆMESIS GRAVIDARUM. Ice pills, brandy, and champagne. Food taken in a horizontal position, the latter to be maintained an hour after eating. Other remedies are chloroform, cocaine, and orexin, also Bematzik's drops (morphine and chloroform). If these remedies fail, nutritive enemata (of pancreatinized meat), and as a last resort, artificial abortion.

NEPHRITIS. When marked œdema is present, rest, hot baths, diuretics, antiseptic puncture of labia, if necessary, and an absolute milk diet.

RIGID OS DURING LABOR. Lateral incisions, to be stitched up after labor.

FLAT PELVIS. If the conjugate is over 6 cm. no interference unless life is threatened; then we should do version and extract; but if the cervix is effaced and the foetal head is in the pelvis, forceps should be applied. If the conjugate is 8 to 9 cm. the same procedure is essayed,

and in case this is impracticable, symphysiotomy or perforation should be performed. If the conjugate is from 6.5 to 8 cm., turning or forceps are to be tried, with Cesarean section as a last resort. If the conjugate is less than 6.5 cm. an absolute indication for Cesarean section is present. If it is known in advance that the pelvis is narrow, artificial delivery between the thirty-third and thirty-sixth week should be brought about.

TRANSVERSE PRESENTATION. Place the woman on her right side and attempt rectification. If this cannot be done, perform version. If the waters rupture, perform immediate version after kolpeurynsis. Actual rapid extraction should be performed only when life is in peril. In neglected cases decapitation is necessary.

IN PROLAPSE OF AN EXTREMITY. If the waters are unruptured the woman must lie on the side opposite the foetal back; if ruptured the extremity should be first replaced and the same change of position adopted. If the limb again prolapses, perform version. If the head is fixed in the pelvis the case must be left to nature, but if spontaneous delivery cannot take place, use forceps or perform craniotomy.

IN PROLAPSE OF THE CORD. Attempt manual reposition in the dorsal position. If this fails use Braun's repositor. After reposition watch the foetal heart, and if necessary apply forceps or practice version. If reposition is impossible and the child movable, perform version. If the head is fixed use forceps.

IN RUPTURE OF THE UTERUS. If merely threatened, extract quickly by incising the cervix and applying forceps; version is contraindicated. If delivery is impossible and the child is in the transverse position, embryotomy is necessary. After rupture has occurred, if the child is still in the womb, apply forceps or perforate. If the child is in the abdominal cavity do not extract per vaginam unless the feet can be grasped; otherwise perform laparotomy. Remove the placenta rapidly, stitch up the laceration, and tampon if necessary.

PLACENTA PRÆVIA. Tampon until the cervix is open to two fingers, then perform version (after Braxton Hicks' method). If the cervix is effaced, extract a foot in order that the buttocks may act as a tampon. Do not deliver until the cervix is completely effaced. If hemorrhage from the placenta prævia occurs during gestation, enforce rest in bed, and if necessary tampon with iodoform gauze. In bleeding from separation of normally situated placenta, accouchement forcé.

POST-PARTUM HEMORRHAGE. Suture perineal wounds after delivery. In atony with retained placenta the latter should be expressed by massage until uterine contractions appear, and when these are at their height the uterus is to be compressed at the fundus with both hands and with considerable force. Ergotin should be given and a

manual separation of the adherent placenta resorted to. In hemorrhage with retained placenta from contractions of the internal os the latter should be dilated digitally. In hemorrhage after delivery of the placenta, employ massage, irrigations of lysol (hot, 1 per cent.), and use the catheter. All coagula and bits of placenta are to be removed. If bleeding persists, tamponade the uterus and cervix, and use ergotin.

ACUTE ANÆMIA FROM HEMORRHAGE. Brandy, tincture of cinnamon, injections of camphor and ether, and salt solution by the bowel and by hypodermoclysis.

ECLAMPSIA. Morphine and chloral; diaphoresis; accouchement forcé.

ABORTION. If merely threatened, enforce rest in bed. For hemorrhage, tampon the vagina and cervix with iodoform gauze until the ovum is expelled. Digital extraction of all residual contents, and subsequent irrigation with a 1 per cent. lysol solution. Tamponade again and give ergotin.

PUERPERAL FEVER. Disinfection of the entire genital tract is the first indication. All excoriations should be touched with tincture of iodine and the uterus washed out with a 1 per cent. lysol solution. If fever and offensive lochia continue, suspect the presence of placental detritus *in utero*, or puerperal endometritis. The uterus then should be drawn downward and the cavity explored with the finger or curette. Tampon the uterus with iodoform gauze, but do not scrape out the cavity. If a peritoneal reaction sets in, apply an ice-bag to the abdomen and give morphine. If signs of sepsis appear, administer liquid food, stimulants, and nutrient enemata. If the fever reaches 40° C., antipyretics or cold pack should be given. In thrombophlebitis elevate the limbs.

Walcher's Position. At a recent meeting of the Italian Obstetrical and Gynecological Society at Turin, Pinzani contributed a paper on this subject. He had made a series of experiments, placing both living and dead bodies in Walcher's position and carefully estimating and measuring the degree of pelvic enlargement. Sixteen women in the puerperal state were investigated in this manner, and undoubted increase in the antero-posterior diameter of the pelvic brim was observed. These patients, a few days after delivery, were placed upon the side and the conjugate measured, and then were measured when the thighs were flexed, and when the legs were extended and carried strongly backward.

A second series of forty-five patients were also investigated. In these the true conjugate was measured by the fingers while the patient was in the lithotomy position, lying upon the back, and in Walcher's position; and in the last a decided enlargement of the conjugate was observed.

The third series of observations was made upon two cadavers, and here the results were striking. From these studies Pinzani concludes that the greatest enlargement in the true conjugate is obtained when the patient is first placed upon the back and then in Walcher's position. In contracted pelves as much as 2 mm. is gained in this way. The increase differs considerably in different cases, varying from 9 to 7 mm. upon the living patient. This posture will give the best results in cases where the contraction is at the entrance to the pelvis, as in flat and generally contracted pelves. Forceps and version are very frequently indicated with the gain in pelvic room given by this position, and many difficult labors are made less severe by its employment. At the moment of delivery there is in these cases also less danger of serious injury to the pelvic floor and posterior wall of the vagina.

In the discussion Pestalozza drew attention to the increase in the transverse diameter of the pelvic brim when the patient is in this position. It is interesting to determine whether the sacro-iliac joints move during extraction of the child with the patient in this position. He thinks it doubtful if the pubes can move far or separate laterally while the sacro-iliac joints are intact.

Mangaigalli had observed, in twenty-eight cases of deformed pelvis, spontaneous delivery in eighteen by the use of this posture. La Torre urged the claim of the Italian obstetrician Mercurio for priority, as he had described this posture in 1595.

Calderini drew attention to the fact that while Walcher's position enlarges the entrance of the pelvis at the brim, the ordinary lithotomy position is better for the later stages of delivery.

Slowing of the Pulse During the Puerperal State. Varnier¹ has conducted a series of observations to determine the presence of slowing of the pulse, which has been commonly thought to occur after labor. In thirty-two pregnant women in whom the pulse was taken during the last two months it was found to be above 75, and only occasionally below this average in twenty-six, or 81 per cent. One of these patients had a pulse which averaged 75, and in two of them the pulse was found distinctly below this average. A second series of eighteen patients who had been confined was recorded, and in whom the pulse was taken in the morning only, while in seventeen others it was taken morning and evening. The duration of these observations was from nine to sixteen days. It was found that of these thirty-five puerperal women but one had a pulse above 75. Twenty had pulses averaging 75 and fourteen below 75. In most of these women the average pulse-rate was as low as 70.

¹ *Annales de Gynecologie et d'Obstetrique*, January, 1899.

It was found that slowing of the pulse occurs more frequently among the multiparæ than primiparæ. The lowest rate observed was 40, and the highest, in multiparæ, 68. From the fifth to the eighth day the pulse was usually slowest; then on the seventh day, and occasionally the diminution in the pulse did not occur until the tenth day. A rapid increase in the pulse-beat was usually observed when the patient first left her bed.

The Heart in Pregnancy. The importance of considering disease of the heart in pregnancy is well brought out in an article by Vaquez.¹ Both aortic and mitral lesions are considered sources of danger, the former producing the usual type of asystole, which may be foreseen, while the latter, particularly when stenosis is present, may cause sudden death, almost without warning, by pulmonary complications. Death may take place four or five days after normal labor, although the preceding pregnancy may have been free from all unfavorable symptoms.

The foetus also incurs great risks, for hemorrhage and abortion are not infrequent. Among a series of 214 cases of heart disease in pregnant women reported by Porak, 112 were delivered at term and 88 before term. Among 41 cases in which abortion occurred from this cause, 21 occurred before the sixth month of pregnancy. Even should the child survive its birth, it is likely to die at an early age, as is shown by the fact that of 40 parents, 36 lost their children before the age of six years.

The question of permitting a woman suffering with cardiac lesion to marry is a serious responsibility, and must be decided in each individual case. The famous dictum of Peters, "For a maiden no marriage, for a wife no pregnancy, for a mother no suckling," is too general.

Carie would permit marriage, whatever the lesion, provided it had not produced symptoms, unless, from the circumstances and occupation, the patient will be unable to rest during the latter part of her pregnancy.

Even in a patient who has already shown symptoms, marriage may be permitted, provided the symptoms consist solely of palpitation or transient œdema; but if hæmoptysis, dyspnœa, and particularly albuminuria be present it should be forbidden.

Huchard takes much the same ground, and permits marriage when compensation is perfect, but strongly condemns it when visceral congestion, œdema, or, above all, albuminuria are present.

In the management of the confinement of such cases the writer advises the use of chloroform in all cases where cardiac symptoms have occurred in the course of the pregnancy; but if gestation has been normal throughout he considers it unnecessary. When mitral stenosis

¹ Journ. de Med. et de Chirurg., October 10, 1899.

is present, with pulmonary complications, chloroform is of value, but requires careful administration and watching. The use of digitalis in the cardiac complications of pregnancy and the puerperium he strongly condemns as likely to produce and keep up the pulmonary congestion in cases of mitral stenosis.

In cases of this kind he prefers morphine, $\frac{1}{10}$ grain hypodermatically, every five or six hours. Caffeine is not to be given unless there is a tendency to syncope, while digitalis is contraindicated until the congestion begins to diminish. This latter drug is, however, often of value three or four days after labor when congestion is passing off, should hepatic or renal symptoms appear; but it should be promptly discontinued on the slightest indication of pulmonary hemorrhage.

Under the title of "Heart Disease from an Obstetrical Point of View," Adam H. Wright¹ gives us a valuable discussion upon this same subject, and proposes and answers a number of questions of great importance:

1. Should a woman with valvular lesion of the heart be allowed to marry? Yes, unless severe symptoms should be present, such as attacks of dyspnoea, palpitation on exertion, or hæmoptysis; although it is to be understood that child-bearing is likely to aggravate the dangers.

2. Which of the heart lesions is most serious? Mitral stenosis. Mitral regurgitation alone is not usually serious. The rarer condition of combined aortic stenosis and aortic regurgitation are dangerous, but not to such a marked degree.

3. How does pregnancy affect the system in cases of heart disease? Compensation is apt to be disturbed, and backward pressure may overload the pulmonary circulation and interfere with the functional activity of other organs, particularly the liver and the kidneys. Abortion, although sometimes caused, is more rare than supposed. It is doubtful whether the tendency to eclampsia is increased in these cases, although albuminuria and dropsy often occur. Occasionally patients suffering from mitral insufficiency seem better during pregnancy, but they frequently lose ground after labor or during lactation.

THE LINE OF TREATMENT followed by the writer during pregnancy is as follows:

1. The patient should be kept at rest, without going to extremes. Moderate exercise is usually beneficial, but if serious symptoms appear absolute rest must be enforced.

2. Calomel, followed by Epsom salts or other cathartics, should be administered if the circulation is disturbed, as shown by dyspnoea, etc.

¹ American Medical Quarterly, September, 1899.

Salts should be given thoroughly, systematically, and continuously until the symptoms are relieved, and then continued for weeks or months, to prevent a recurrence of symptoms. First in the list of these remedies the writer places Epsom salts, next strychnine and digitalis, or strophanthus. Distressing dyspnoea will be relieved by nitrite of amyl, and dry cupping of the thorax is often beneficial.

3. The diet should be regulated, and the patients encouraged to drink as much milk as they like, but no more. A suitable dietary is selected from koumyss, cereals, bread, tea, fish, oysters, table mineral waters, green vegetables, most acid fruits, chicken every other day, and meat once a week. If no albuminuria appears, eggs and a little more meat may be added.

4. No diuretics except water should be given.

5. A warm bath, to keep the skin active, should be given daily.

6. Rarely is it advisable to induce abortion, although operative interference may be necessary if marked failure in compensation occurs early in pregnancy, attended with urgent symptoms that fail to yield to appropriate treatment and continue to grow worse.

7. The history of the patient in previous pregnancies must be taken into consideration. When great danger during and after confinement has been passed through in a previous pregnancy it is doubtful if the patient should be allowed to pass through a similar strain for a second time.

8. The induction of premature labor is sometimes considered advisable; but, as a rule, the patient has a better chance when this operation is not performed.

The question of the effect of valvular diseases upon labor demands careful attention. In many cases where the gravest consequences were apprehended an entirely normal labor occurs.

The symptoms during labor usually resemble closely the symptoms during the last weeks of pregnancy. The pulse and respiration are much quickened, and dyspnoea and palpitation are apt to occur.

A prognosis based upon actual statistics is difficult to obtain. Some writers place the mortality at from 10 to 60 per cent., but this is unnecessarily alarming. Some statistics include only the more serious valvular lesions, while others are old and unreliable.

TREATMENT DURING LABOR. The line of treatment indicated in pregnancy may be carried on also during labor. The greatest benefit will be derived from strychnine and strophanthus, to help the heart action, with nitrite of amyl and nitroglycerin for dyspnoea and præcordial distress. A cupping-glass over the heart is recommended for irregularity of the pulse. Chloroform should be administered during the last part of the first and during the whole of the second stage of

labor. Some writers hold that chloroform is contraindicated in these cases; but increasing experience has led the writer to hold, with Fothergill and others, the contrary opinion. It must, however, only be administered by a skilful anæsthetizer. Ether is positively contraindicated, on account of the danger of inducing struggling.

In most cases forceps should be applied at the end of the first stage. An abdominal binder may well be applied before delivery, and should be gradually tightened during delivery, to compensate for the sudden diminution of intra-abdominal pressure. This should be applied above the uterus, in order not to interfere with hemorrhage from that organ, which is highly desirable. Even venesection from the arm may be advisable if an abnormally embarrassed circulation persists. The use of ergot should be avoided. The greatest period of danger is during the third stage, but the patient is not out of grave danger for several days after delivery, and the greatest care must be observed for weeks.

Duhrssen¹ reports a case in which he performed vaginal Cæsarean section upon a woman suffering from a serious cardiac lesion. In this case the cervix was undilated and the mouth of the womb tightly closed. Fearing that the mother would die before the child could be delivered, he performed vaginal Cæsarean section. This resulted in the delivery of a living child, but the mother died very soon after. The operation itself required but twenty minutes, and the child was delivered five minutes after the operation was begun. The autopsy revealed that the patient suffered from advanced mitral disease, accompanied by rapid dilatation of the ventricles. The writer considers this method of operation most advantageous where delivery must be accomplished with great rapidity.

Nursing in the Lying-in Period. Gustav Kolischer² calls attention to a few points in the care of women during the puerperium which, if observed, add to the comfort and safety of the patient.

Ergot, when administered by the mouth, frequently produces disturbance of the stomach and lower intestinal tract without assisting involution; in such cases an aqueous solution of ergot added to a little glycerin and mixed with a gill of warm water may be given by the rectum once in twenty-four hours until the uterus is firmly contracted.

Catheterization should be avoided, if possible, and it should be remembered that a large amount of fluid is lost during delivery by perspiration and hemorrhage, so that a rapid accumulation of urine is not usual, and usually no uncomfortable accumulation will take place under twelve hours. A warm poultice applied to the urethral opening and gentle pressure over the bladder will often induce natural micturition.

¹ Berlin. klin. Wochenschrift, No. 6, 1899.

² Medicine, January, 1900.

A diagnosis of cystitis is often made where there is only desquamative catarrh. A microscopical examination of the urine will determine the condition, and if pus is absent there is no cystitis. In such cases, where there is severe pain and a feeling of heaviness above the pubes, a single injection of iodoform mixed with sterilized oil will give relief. Glycerin must not be used, as it increases the pain and irritability.

If there is pain in the symphysis or sacro-iliac articulations, or permanent pain in the thighs, some distortion of the pelvic articulations should be looked for. A firm bandage applied to the pelvis will give comfort, immobilize the joints, and avoid any exudate or fibrinous deposit in the joints.

The galvano-cautery is the best treatment for the fissures of the nipples; if this cannot be used a 4 per cent. solution of chromic acid may be applied with a brush.

Eggs should not be given to patients who suffer from habitual constipation or flatulence. Where there is persistent constipation a faradic current of moderate intensity, applied preferably by a roller electrode, is useful in stimulating the intestines. Nervines and antispasmodics should be administered where hardened, painful nodules appear and disappear.

Maternal Impressions. Henry F. Lewis¹ remarks that, as a rule, when a child is born possessing any marked peculiarity, great ingenuity is displayed in ferreting out in the history of the pregnancy some fright or mental shock that can be considered the cause of the phenomenon. Even the most intelligent of the profession, in reporting the birth of a monster, indulge in speculation upon the probable maternal impression which produced it.

If there is any truth in the theory, then all cases of peculiar deformity should have some definite history of maternal impression corresponding to the condition of the child; and, conversely, every case of extreme mental shock or fright should result in the birth of a monster; but neither of these statements holds true. Neither do the malformations correspond in the least, in many cases, to the object which conveyed the shock to the mother. As a matter of fact, monsters and anomalies follow as definite laws of classification and etiology as do other natural phenomena. How account by the maternal impression for such examples of internal malformation as transposition of viscera, bifid uterus, supernumerary spleen, etc.? It is, moreover, inconceivable that a maternal impression should remove structures already formed. Most of the organs are well on in development during the early weeks of pregnancy, while "maternal impressions" are usually dated from the fourth month

¹ Illinois Medical Journal, November, 1899.

or later. It is even more inconceivable that any mental condition should be able to add superfluous members.

These remarks of Lewis are well borne out by the following interesting report of "Four Cases of Infantile Monstrosities in the Same Family," where the etiological factor ascribed by the writer can, however, not be given much credence. William M. Hestle¹ relates the following history: In May, 1892, the patient, a well-formed, healthy young mulatto woman, gave birth to a still-born male infant about the seventh month of gestation. Its body was well developed, but it had no arms or legs or external ears. The hands and feet were perfect, but attached, the former to the shoulders, the latter to the hip-joints. In July, 1893, and again in October, 1895, she was delivered of a full-term, perfectly formed living female child. In March, 1897, she gave birth to a still-born male child about the fifth month of gestation. It was deformed precisely as the first child had been. In February, 1898, and again in December, 1898, a still-born male child was born similarly deformed. The father was a very healthy man. During the mother's first pregnancy, about the third month of gestation, her brother entered her room about midnight and threw a living opossum on the bed, frightening her much. She felt great anxiety after that lest her child should be "marked." During her second and third pregnancies no fright occurred, but during the three later pregnancies she was frightened by the sight of an opossum, and had the same constant fear about deformity. There was no history of any deformity among the relatives on either the maternal or paternal side.

There seemed to be a direct causal relation between the fright from the opossum and the deformed children. In the opossum the legs are very short, and the auricle is almost invisible on casual inspection. Just how the impression made on the mother's mind could modify the shape and development of the child's body cannot be explained.

Malaria and Pregnancy. F. H. Edmonds,² from an experience of twenty years in the malarious districts of British Guiana, is convinced that malarial fever is responsible for a large number of still-births. The form of the fever varies, and the effects vary correspondingly. Simple intermittent fever has no effect on conception, and, if mild, no influence on the mother or child's life. In the more acute cases, where the temperature rises over 104° F., abortion usually takes place. After the sixth month of pregnancy malaria gives rise to a more acute and dangerous condition. If the patient is attacked by intermittent fever the foetal movements become very strong, continuing in many cases until

¹ Virginia Medical Semi-Monthly, June 23, 1899.

² British Medical Journal, April 29, 1899.

the temperature passes 103° F., when a painful, continuous cramp of the uterus appears to limit the motions of the fœtus. In many cases the fœtal movements are never felt again, although the next paroxysm will be marked by strong contractions of the uterus, to be followed later on by the expulsion of a dead fœtus. The writer's custom is to prescribe 5 grains of quinine every four hours, and where the temperature has not passed 103° F., and fœtal movements are still felt, the malaria is often checked and the pregnancy has proceeded to full term. Many cases could be cited where women during the early months of pregnancy have taken 10 and 15-grain doses of quinine and continued the pregnancy to term.

When the bilious remittent type of malarial fever appears during, or just after, parturition the mother's life is in the greatest danger. The patient has five or nine days' alternations, each marked by higher temperature, deeper jaundice, and greater weakness; then dies quietly, with many appearances of puerperal fever, but free from uterine pain or tenderness, and with the lochia normal as to color, quantity, and odor.

Hemorrhages in the Early Months of Pregnancy. In a clinical lecture at the Glasgow Maternity Hospital, Jardine¹ called attention to cases of supposed menstruation during pregnancy in which the hemorrhage occurs from the unimpregnated half of a double uterus. Bleeding in early pregnancy may also come from a diseased cervix. He described two cases of women, pregnant about the seventh month, who had sustained wounds of the labia, which bled excessively. It was necessary to suture these wounds, to tampon the vagina and vulva with gauze, to make pressure by a large vulvar pad and T-bandage, and apply cold. He also called attention to early ectopic gestation as a cause of hemorrhage, and reported a case in which a patient expelled a cast of the uterus which on examination showed neither decidual cells nor chorionic villi. It was evident that pregnancy had not been present. In cases of hemorrhage and cramp-like pain he considered the microscopical examination of the lining membrane of the womb to be of the greatest importance.

The Treatment of the Incarcerated Pregnant Uterus by an Elastic Bag. Westphalen² reports an interesting case of retroversion of the pregnant uterus which became incarcerated, and which was restored to normal position by the use of an elastic bag. The patient had borne six children. She was in the third month of pregnancy, and for three weeks had suffered from pain and disturbance in the functions of the bladder. Both legs had swollen, and had remained in that

¹ Scottish Medical and Surgical Journal, March, 1899.

² Centralblatt für Gynäkologie, 1899, No. 5.

condition for eight days. Obstinate constipation was present. The womb was retroflexed beneath the promontory of the sacrum. Efforts to replace it by manipulation failed. A further attempt was made with the patient under an anæsthetic and also in the knee-chest posture. The womb could be brought up to the promontory of the sacrum, but could not be replaced. Accordingly, a large elastic bag was inserted within the vagina and distended, and the patient was placed upon her side, with the pelvis considerably raised. When she was next seen it was found that the swelling in the limbs had subsided, the symptoms had disappeared, and the womb had become replaced. Further treatment consisted in keeping her in bed, lying upon the side for a short time only.

Hernia of the Pregnant Uterus. W. V. Anderson¹ says that frequent mention is made in text-books of the fact that the recti muscles may separate, allowing the gravid uterus to carry the attenuated aponeurosis before it, and thus form a hernia, the uterus being the herniated part, yet no mention is made of the part this condition of things would play at the actual time of confinement.

This condition is more common in multiparæ where the pregnancies have followed each other in rapid succession. It amounts to an intervention of the pregnant uterus, and in extreme cases the fundus may descend almost to the knees. The pressure produces œdema, vesical tenesmus, and pain in the distended cutaneous tissue. Reposition of the uterus and the application of a suitable bandage will usually relieve these symptoms. The writer was called in consultation to see a Polish woman, the mother of ten children, who had been in labor thirty-six hours under the care of a midwife. The patient was suffering from a uterine hernia, the pear-shaped mass, suspended by its cervical attachments, reaching almost to her knees. It was movable, and the os was fully dilated. The position of the uterus rendered the uterine contractions ineffective. The patient made a vigorous effort to help herself at each contraction, and the uterus would rise until its long diameter was at a right angle to the body, but the greater the effort the more it interfered with delivery. The woman was anæsthetized, the uterus inverted and held in place by an assistant; forceps were applied and the child delivered without difficulty. Two days after delivery the abdominal muscles were still so relaxed that they lay in rolls on either side of the abdomen, and so prominent that the fingers could be slipped under them the skin being also relaxed. Three months later they had contracted so as to occasion no inconvenience.

Right-sided Paralysis of Gradual Onset Occurring during Pregnancy. This interesting and unusual condition was reported by Robert

¹ Medical News, October 28, 1899.

Craik.¹ The case was that of a primipara, who, when eight months pregnant, complained of numbness and loss of power in her right hand and fingers. She stated that it had been coming on gradually for a month. There was slight difficulty, also, in speaking. On examination the grasp of the right hand was found to be very feeble, and sensation was much impaired. Examination of the urine was negative. Ten days later the difficulty in speaking had increased, and the right side of the face looked flat and flabby. There was dribbling of saliva, and deviation of the tongue to the left. The knee-jerk was slightly increased on the right side, and there were troublesome cramps in the right leg and calf, especially at night.

Labor occurred at full term, and was tedious, owing to the occipito-posterior position of the child's head. Forceps had to be used. The cramps never recurred after the confinement, and there was gradual improvement of the other symptoms, and three months after delivery there was complete recovery. There was no indication of syphilis, lead or alcohol poisoning: The heart and kidneys were normal.

TREATMENT consisted in rest, milk diet, and occasional purgatives.

THE PUERPERIUM.

When shall the Post-pregnant Woman Sit Up? is an important question in which all have an interest. This subject is well handled in an editorial in *Obstetrics* for June, 1899. The writer asks just what influence is at the bottom of the rule-ridden system that directs us in most obstetrical customs. It is hard to say, unless it is due to the general similarity of labor with its before- and after-accompaniments. No other branch of medicine seems to be guided by such arbitrary rules as obstetrics. When ergot-giving was in vogue every patient, strong or weak, must receive the inevitable drachm. The binder had to embrace every abdomen, large or small; the vaginal douche scoured all vaginæ, clean and unclean; and even the dear doctor's visits must be regulated by the calendar rather than by the medical needs of the patient.

The patient's escape from her puerperal bed has been under the chain of rule and regulation. The obstetrical statistician—and we are all statisticians—gathers from a thousand recorded confinements that the average length of time in bed was eight or nine days; and as most of the patients lived and had other babies, this length of time, therefore, was the best time, etc.

All of which is very absurd. If a doctor's judgment is so poor that he had better follow averages, he had better "brush up." Put a

¹ *Lancet*, September, 20, 1899.

healthy, strong man in bed and keep him there for a month, and he will get up an invalid for the time being. It is just as bad to keep one woman fourteen to twenty-one days in bed as it is to let another up in four to seven days. Many healthy, well-exercised women do not need to remain recumbent longer than from seven to nine days, while some can begin to get up upon the fifth day without apparent harm. Patients whose muscles are "soft" and who have been accustomed to indolent, lazy living will require from twelve to twenty-one days, even though there are no lesions of the uterus or perineum. Lacerations along the genital tract place those so injured in a class by themselves. They cannot get up until their wounds have healed. A good working rule, which always requires individual application, is that a patient should begin to sit up whenever she can do so without such posture causing gravity congestion in the genitalia. The change of posture sometimes causes an increase in appetite, and even acts as a stimulus to the uterine muscle. The erect posture should, of course, be assumed quite gradually, the patient sitting up only a few minutes at a time, lengthening the time according to the sense of comfort and absence of effect upon the lochial flow. Much assistance to uterine involution can be had by the use of sponge baths, ergot, strychnine, and massage.

The one great difficulty on the practical application of individually determined periods for getting up lies in the objection that the surgical doctrine of non-intervention imposes in the care of women in the days immediately following labor. We should not palpate the uterus per vaginam at such times if we can avoid it.

And this gives more excuse for practising by rote than most such work deserves. Repair of the cervix immediately after delivery is generally opposed, and, we think, justly; but when we judge from the general condition of the patient that she might be benefited by sitting up, we are justified and obligated to make a speculum examination to note the condition of the cervix, and inferentially of the endometrium, after the seventh day.

There is probably more general ignorance among physicians regarding the phenomena of genital behavior in the fortnight following labor than in all the other periods of pregnancy combined. We cannot say that we would have them endeavor to clear away this ignorance by frequent direct examinations, for more women would probably be harmed than helped for a time; but we do hope there will be a gradual improvement in the attention given by teachers and a consequent advance in diffused knowledge that will enable all to apply the rule of individuality in all cases as to when the post-pregnant woman shall sit erect.

Eclampsia. The editor of *Obstetrics* has well said: "Taken as a whole, the literature of eclampsia forms one of the most unsatisfactory

chapters in the history of obstetrics. Conflicting ideas as to etiology and pathology lead, naturally, to the present conflicting ideas as to treatment, and to contradictory and bewildering statistics as to result. Perhaps, after all, the practical obstetrician need not feel that he is worthy of too great reproach for his inability to find a satisfactory treatment for a condition whose everyday phenomena are still unsolved riddles to the physiologist and the pathologist. When our laboratory scholars have agreed upon a theory as to the origin and life-history of urea, perhaps we shall approach the solution of this perplexing problem. It is not our purpose, however, to discuss here the treatment of eclampsia in general, but rather to refer to one phase of the subject with reference to which there is substantial agreement among recent writers. In the treatment of eclampsia, as elsewhere, it should be the aim of the physician, if he cannot always do good, at least to avoid doing harm; and it is safe to assert that in the treatment of eclampsia in the past this rule has been honored in the breach rather than in the observance."

Which one of us, even if strong and in good health, would like to be subjected to the prolonged chloral and chloroform narcosis?—happily not practised as much as formerly, but still too much in vogue. If there is one thing in connection with the treatment of eclampsia about which modern authorities are beginning to agree it is the folly and danger of this kind of treatment.

It is significant enough that Ohlshausen and Veit, in the last editions of their work, while strongly advocating the use of morphine and not advising the use of either chloroform or ether (except, of course, in operative procedures), admit the superior safety of ether.

Still more striking is the fact that such keen observers as Ahlfeld, while holding diametrically opposite views as to the induction of labor and the operative treatment, unite in proclaiming the danger of prolonged chloroform narcosis. "It increases the tendency to death," says Smyly, as the result of many years of observation at the Rotunda. Fritsch, too, in a recent summary, concludes that many deaths have been caused by this kind of treatment in cases which might otherwise have recovered.

The employment of anæsthesia in the various obstetrical operations which may form part of the treatment of eclampsia is, of course, indispensable; but its long-continued use, simply for the purpose of suppressing the convulsions, is a source of danger both to mother and child.

Even in operative procedures we should not relax our vigilance. Duhrssen has called attention to the occasional occurrence of sudden death at the very beginning of chloroform narcosis in cases of eclampsia with much uterine distention. In such cases it would seem to be a wise

precaution to rupture the membranes before beginning the administration of the anæsthetic.

Shearer¹ speaks as follows upon the "Symptomatology of Puerperal Eclampsia": "Prodromal symptoms are more frequent when the eclampsia occurs during the course of pregnancy than at the term of pregnancy or subsequently. Severe headache, vertigo, and partial or complete loss of vision are important symptoms, and if there is albuminuria the source of the albumin should be looked for. These premonitory symptoms may be present for weeks, or days, or hours, or even only minutes, and in some cases may be absent altogether. Death may result from asphyxia, or the shock to the brain and sympathetic nervous system may be so severe as to paralyze the heart. In other cases enfeeblement of mind and body result, which may terminate fatally some weeks afterward."

AFFECTIONS OF THE KIDNEY IN RELATION TO PREGNANCY. J. Clarence Webster² has given us a very interesting article in which he says that functional and structural changes due to pregnancy occur with greater frequency in the kidneys than in other organs. There is more or less hypertrophy of the kidney during pregnancy, and the quantity of urine is usually increased, while the specific gravity is lowered. Sugar is often found in the urine, but more frequently after delivery; this is only milk-sugar from the breasts, not true glucose. Pregnancy does not seem to affect the presence of the latter. Peptones are sometimes found, especially during the first three or four days of the puerperium; they are derived from the involution of the uterus. The change which has received most attention is the presence of albumin in the urine, and concerning this there is most difference of opinion. Recent observations prove that serum-albuminuria occurs in about 2 per cent. of pregnant women who are healthy when pregnancy begins. Labor increases the percentage. It is most frequent in very young or very old primiparæ and in multiple pregnancies. It is rare in the early months of pregnancy. There seems to be reason to believe that there may be albuminuria, not pathological, but due to a physiological peculiarity.

In many cases of albuminuria other signs of renal disease are present—anasarca, deficiency in the amount of urine and solids excreted, and the presence of casts, leucocytes, and blood-corpuscles. Sufficient post-mortem work has been done to show that cortical lesions generally occur in these cases, although Ohlshausen described a case in which the urine contained albumin, casts, and blood-corpuscles at the time of labor, eclampsia also existing, and yet the post-mortem showed no changes whatever in the kidneys.

¹ *Annals of Gynecology and Pediatrics*, Boston, February, 1899.

² *Journal of the American Medical Association*, April 21, 1900.

The various theories as to the etiology of the renal disturbance may be briefly stated. Compression of the ureters; intra-abdominal pressure on the kidneys themselves, causing degeneration; compression of the renal arteries or veins; and altered metabolism affecting the liver as well as the kidneys. The great quantity of waste material to be eliminated may act as a direct or indirect irritant to the kidneys. Much speculation as to the nature of the waste product exerting the baneful influence exists. Various substances are mentioned—creatin, creatinin, leucomaïnes, ptomaïnes, inorganic salt of potash, alkaloidal products of digestion, etc. Still others consider microbial infection the main factor in producing the toxæmia of pregnancy.

Where true nephritis exists before or begins in pregnancy, the disease becomes more serious; uræmia is apt to occur; eclampsia occurs in only a small percentage of cases, as has been shown by Fehling and Leyfert.

The premature delivery of the fœtus often occurs, largely due to the death of the fœtus from the toxic materials accumulated in the system. The foetal mortality is fully 80 per cent.

The treatment of the renal disorders of pregnancy must be the same as in the non-pregnant state. Their early recognition is of paramount importance, and the question of premature delivery must be settled for the individual case.

URINARY EXCRETION IN ECLAMPTICS. Bar¹ has just published an extremely important paper on this subject, in which he prefaces his remarks by the statement that the discovery, by Jurgens, of specific lesions of the liver in eclamptics was sufficient to change the prevailing opinion that eclampsia is necessarily due to nephritis. We now look upon the kidney changes as an effect rather than a cause, but the problem is far from being settled. Bar has, therefore, conducted a new series of investigations bearing upon this subject. It is common experience that during an attack of eclampsia oliguria is present, which may be of extreme degree, amounting even to anuria. A case is now cited in which a woman was brought to the hospital in the *status eclampticus*. During the next four days 4 or 5 grammes was the average amount of urine excreted daily (normal, 50 grammes). There was not enough urine collectible to test for toxicity. The proportion of urea, however, was very small.

On the other hand, we sometimes see cases of eclampsia in which the urine continues to be voided in normal quantities. For example, a patient had seven eclamptic seizures in five days, yet at no time was the excretion of urine below normal. Urea was reduced in proportion, but not to such an extent as to suggest impairment of the renal function.

¹ Le Bulletin Médicale, March 28, 1900.

For the past two years, in the attempt to diminish the source of intoxication in eclampsia, Bar has dispensed with all toxic medication (chloral, opium, etc.), has flushed the colon, let the blood, and enforced a certain diet, the so-called water regimen, giving the patient as much as 200 grammes of Evian water every hour. This caused a higher degree of polyuria than the milk diet. In April, 1899, a patient was admitted in the *status eclampticus*. The regimen above described was begun, and on the second day the patient passed over 2000 grammes of urine, while on the sixth day nearly 2800 grammes were voided. Nevertheless, the patient's condition was in no wise improved, and she died in agony. We, therefore, must admit that free discharge of urine is entirely compatible with pernicious eclampsia.

Still, oliguria is of such frequent occurrence in eclampsia that it must mean something. What is the significance of this phenomenon? In the pre-eclamptic period the urine is usually scanty, dark-colored, and albuminous. It is not always easy to recognize the moment at which the phenomenon begins, but Bar has witnessed its onset on a number of occasions. For example, a woman was admitted in 1894 with all the premonitory signs of eclampsia—intense headache, amblyopia, etc. The urine was scanty (200 grammes in twenty-four hours) and of increased toxicity. The milk regimen was instituted and the urine became abundant, but without much reduction in the amount of albumin present. Several days after admission it was noted that less urine was being secreted, while the toxic coefficient was increasing. On the ensuing day an eclamptic attack occurred and marked oliguria developed. The attack having passed off, the urine soon became normal.

Bar has been able on several occasions to certify that oliguria sets in suddenly during the hour following the first eclamptic attack. To demonstrate the truth of this statement it is necessary to obtain urine from the patient every hour.

Conversely, it is usually found that a polyuric crisis sets in from twelve to twenty-four hours after the last attack. This crisis is generally, but not always, a sign of recovery.

So much for the quantity of urine eliminated in eclampsia. With regard to the quality, which is really the more important subject, we occasionally find a great diminution in the amount of urea and salts; but this is by no means the rule, for the highly concentrated urine generally contains an increased proportion of urea, while the salts are not diminished in quantity.

Substances like acetone, urobilin, and indican are, perhaps, absent before the outbreak, but shortly after an eclamptic seizure one or more of these bodies may appear in the urine, often in enormous quantities.

With regard to albumin, many varieties have been encountered in

the urine of eclamptics. Bar has found the peptones, aceto-soluble albumin, etc., while present in small quantities before the attack, become enormously and rapidly increased afterward.

If, now, this peculiar behavior of the renal function is due to a poison, whence does that poison proceed? The destructive lesions found at times in the liver appear to be coeval with the eclamptic seizures. While we know nothing of their nature, it is, of course, plausible that the sudden release of poisonous products of disintegration might overwhelm the kidneys as a part of a general intoxication.

PATHOLOGY OF ECLAMPSIA. Stroganoff¹ advocates its contagious nature—a theory which we cannot ourselves accept and which all Russian authorities deny. He bases his views especially upon 118 observations in his own and other obstetric institutions. By these statistics he demonstrates that the patients have the first attack four to eighteen hours after their admission, and the same interval often exists between the first and the second case in the clinic, and also that the child of the eclamptic patient is seized after the same period; where the eclampsia has evidently been contracted outside the hospital it must be referred to some other outside cause.

The contagious principle seems to persist for about three weeks, and is probably transmitted by means of the air in the respiratory tract, since careful researches have apparently excluded the genital tract. Rigorous isolation of the eclamptic patient, if not of the persons nursing her, is beyond a doubt necessary, since the number of cases observed in hospitals exceeds that in external patients. The theory of eclampsia advanced by Massen will prove to be rather a confirmation of Stroganoff's theory than otherwise; the eclampsia of albuminuric patients cannot be distinguished in any way, not even by anatomical section, from primitive eclampsia; but this does not disprove the contagious nature of the latter. Stroganoff has no doubt but that careful and unprejudiced study of the production of the cases will demonstrate exclusively the contagious nature of the disease.

"ECLAMPSIA: ITS PATHOGENESIS AND TREATMENT IN THE LIGHT OF PRESENT OPINIONS," is the title of an article by Prof. Fehling² which is of special interest.

The theory of the bacillary origin of eclampsia has hardly been happily set aside than a new one from France—that it is a hepato-toxæmia—threatens to prevent any real advance in our knowledge of this disease.

An examination of the post-mortem conditons, published by Bouffe de St. Blaise, Bar, Budin, and in Germany by Schwert, Lubarsch, Prutz,

¹ *Annales de Gynec. et Obstetric*, 1899, p. 68.

² *Hale Medical Society*, February 8, 1899.

Winckler and others shows that the alterations in the liver, the well-known hemorrhagic and anæmic necroses, the liver-cell emboli, the thromboses, and the emboli of placental giant cells are by no means constant occurrences, and stand in no proportion whatever to the severity of the case. The pathological anatomy of the kidneys is much more uniform. Sufficient attention has not yet been paid to the morbid anatomy of the foetus, in which somewhat similar conditions have been pointed out in the liver and kidneys.

It is of great importance that in animals Schwert obtained by the injection of infusions of the placenta the same intravital coagulations as are found in eclamptics after death. Kollman found the percentage of fibrin in the blood let from eclamptics higher than usual. Moreover, Vollard has shown that the somewhat contradictory experiments upon the animals by injections of urine and serum, made by Tarnier, Chambrelant, Ludwig, and Saxer, are not objectionable, and has found that the urine of eclamptics may contain a coagulating material which is capable of causing thromboses during life.

The theories, therefore, which look for the cause of eclampsia in an affection of the liver during pregnancy are not yet satisfactorily established.

It must be confessed that eclampsia is a thoroughly typical form of disease and intimately associated with the process of procreation. It may be that the metabolism of the foetus and the transference of the final products into the maternal circulation is of more importance than has hitherto been supposed. The nephritis of pregnancy is most probably not the cause of eclampsia, but the first sign of intoxication, of which eclampsia, if it supervene, may be the second.

Prophylaxis, a rigid milk diet, and dealing with albuminuria in pregnancy, must play a great part in the treatment of eclampsia, according to Tarnier.

Early delivery without too much interference is rational; the membranes may be ruptured after the first attack even when the cervix is undilated. Blood-letting (not more than half a litre) is perhaps not indicated by the disease, but is life-preserving in congestion of the pulmonary circulation. On the other hand, the stimulation of the functions of the skin and kidneys, especially by means of subcutaneous injections of salt solution, is the most important thing to eliminate the toxins.

It is well to use chloroform and morphine in moderation, but large doses of morphine are perilous, and its narcotic action on patients in toxic coma merely hastens the end. In recent years the speaker has seen many eclamptics die from the effects of morphine rather than from those of the disease.

Prof. Harnack remarks that as eclampsia is a disease of the last month of pregnancy—that is, at the time when the fœtus has reached a certain maturity—it follows, according to the fœtal theory, that it is not until this time that chemical changes occur which would cause eclampsia.

TREATMENT OF ECLAMPSIA. W. R. Blailock¹ advocates, when eclampsia has occurred, chloral as the best remedy for the convulsions; it should be given by the rectum. “Dissolve 150 grains of chloral in 10 ounces of pure water; inject 4 ounces into the rectum; then every fifteen or thirty minutes inject 1 ounce until the convulsions cease or until the whole amount is given.” If they continue wait a few hours before giving more. If the child is dead or the attacks show a tendency to continue, empty the uterus. More chloral may be given, if necessary, even up to 180 or 200 grains. Charpentier gave 180 grains in ten hours, and the patient recovered.

CASES OF CÆSAREAN SECTION FOR ECLAMPSIA. Hillman² states that eclampsia is but seldom seen at the Jena clinic. He relates seven cases observed during 1895 to 1898, all of which proceeded to a favorable termination. The treatment was rest and an exclusive milk diet. In no case was it necessary to interfere surgically to save the child.

However, at the close of the year 1898 a case of eclampsia was treated in which the Cæsarean operation was indicated. The patient was in deep coma, with tracheal râles; it was not possible to determine whether or not the child was living. Section was made after a minimum inhalation of chloroform, the patient being almost sufficiently narcotized by the disease.

The uterine incision involved the placenta, which was divided, and the child was found to have perished. The uterine contents were removed, salt solution thrown into the cavum uteri, and the incision sutured. The patient made a slow recovery.

Hillman finds that forty cases of this sort have been reported in the literature, including his own. Of this number, twenty-two mothers have died of primary or secondary mortality. Seventeen children were saved by operative interference.

ADHERENT PLACENTA.

Charles B. Reed,³ in a series of observations on the third stage of labor, finds that the time required for the spontaneous delivery of the placenta varies from a few minutes to thirty-six hours; but where the

¹ *Annals of Gynecology and Pediatrics*, Boston, February, 1899.

² *Monatsch. für Geburts. und Gynäk.*, August, 1899.

³ *Journal of the American Medical Association*, May 6, 1899.

delivery is delayed more than two hours, some pathological condition must be present.

Owing to the immaturity of the placenta and the absence of the usual degeneration, adherent placenta occurs more often in abortions than at term. This condition is dangerous to the mother always, sepsis or hemorrhage being the cause of death.

The cause for this condition may be considered under three heads :

1. *Causes Attributed to the Placenta.* Inflammation of the placenta is the most common. This may arise in the connective tissues or in the arteries ; and the placenta may become either permanently detached, owing to fatty changes, or closely adherent to the uterine walls. Traumatism may produce this inflammation, and rheumatism and syphilis are also given as causes. In placenta succenturiata the main portion of the placenta is often delivered, while the smaller portion remains adherent. Placenta prævia is the most common placental anomaly in connection with adherent placenta, Chazan's explanation being that the placental attachment in these cases is removed from the point of greatest contraction of the uterus, and less power can be applied to produce its detachment. Abnormally thin placentas are more apt to be adherent.

2. *Causes Attributed to the Uterus.* A previous endometritis may furnish the starting-point of placental inflammation. Atony uteri affecting the whole uterus, and manifest during labor, or affecting only the placental site, is the most important cause. This condition is most common in poorly nourished patients, but may occur in vigorous women, so that it seems necessary to consider Rokitansky's theory, that nervous depression may be a cause. "Paralysis of the placental site" might explain the frequent association of adherent placenta and *inversio uteri*.

3. *Causes Attributed to the Utero-placental Connection.* Winckel mentions extravasations of blood into the decidua serotina, and thence into the villous spaces, or they may arise from the vessels of the villi, becoming changed into firmer connective tissue. Godson, in 1896, with data from microscopical examination, shows that the adhesions are commonly due to a deposit of fibrin originating in the decidua and involving the opposing surfaces of the placenta and the uterus, the cement substance being a tough, fibrous material, difficult to separate from the uterine wall.

Consequences of Retention. Where the placenta is partly detached hemorrhages occur, demanding the removal of the placenta.

Where there is complete adherence the retention may last for months. Gallant reports a case where the placenta was retained for a year, and a second pregnancy with placenta prævia occurred. Aside from the danger from hemorrhage and sepsis, the retained placenta or fragment

thereof may give rise to polypi, hydatiform moles, or even malignant neoplasms.

DIAGNOSIS. The history of the case will usually give the diagnosis when the entire placenta is retained, and the enlargement of the uterus, as well as its soft, doughy feeling, is a guide; but where a history cannot be obtained, and the cord has been torn off by traction, a thorough exploration of the uterine cavity with the finger is demanded. In cases of placenta succenturiata confusion may arise from the detachment and delivery of the major portion while the smaller fragment remains *in utero*.

TREATMENT. Indications for removal, after abortion, are any suspicious odor or discharge; and after labor, the removal is indicated whenever the usual methods have failed after twenty-four hours, or sooner, if any unpleasant symptoms develop. Thorough antiseptic preparation of the external genitals, vagina, and the operator's hands must be made. Then, under deep anæsthesia, the hand is doubled up into a cone shape and introduced to the placental site; then the fingers are inserted between the placenta and uterus, and the former stripped from its base, while the external hand secures uterine contraction by massaging the uterus. Any remaining fragments may be removed by a curette, or, better, the uterus may be tamponed with iodoform gauze for forty-eight hours, when the fragments will be easily removed by the finger. In collapse from hemorrhage one to three parts of normal salt solution should be slowly injected under the breasts. Elevation of temperature can be controlled by diffusive stimulants and quinine.

Accidental Hemorrhage. Jardine¹ describes the case of a multipara, seven months pregnant, who had profuse hemorrhage following straining in emptying the bowel. As the os was fully dilated, the membranes were ruptured and the child delivered by forceps. Firm pressure over the uterus expelled several large, black clots and the placenta, which had been completely separated. Post-partum bleeding was checked by a hot douche, and, with the use of ergotine and ether, and the injection of saline fluid, the patient recovered.

He also reports the case of a woman having a contracted pelvis in whom labor was induced. During the course of the labor a de Riber bag was introduced to dilate the os, and was filled with carbolic solution, pumped in through a compression syringe.

The patient suddenly became white, the pulse grew very weak, and blood-stained fluid was at once discharged. When the bag was withdrawn it was found to have a rent nearly an inch in its side. The patient was at once delivered by version of a living child. Secondary

¹ Scottish Medical and Surgical Journal, June, 1899.

hemorrhage from a torn cervix caused her death. The bursting of the bag had caused separation of the placenta, which was fatty. On examination the bag was found to have been made of some preparation of rubber. Some of these bags are made of silk, and might possibly be stronger. The case illustrates one of the dangers of induced labor.

In general, in premature separation of the placenta, Jardine advises delivery as soon as possible. He calls attention to severe pain in the womb, which is often present, and also to the fact that at times the womb in these cases is soft and relaxed, and at other times firm and tense.

Post-partum Hemorrhage. *The American Journal of the Medical Sciences*, January, 1900, quoted an interesting article on "Post-partum Hemorrhage" by Jardine, physician to the Glasgow Maternity. He calls attention to the important function in preventing hemorrhage exercised by the retraction of the muscle of the uterus. Recognizing as a primary cause exhaustion of the uterine muscle, he urges that in no case should labor be allowed to drag on indefinitely. If in the second stage the pains are lessening he urges the use of forceps. He properly draws attention to the fact that in most instances post-partum hemorrhage follows improper conduct of the third stage of labor. When the placenta is adherent he would insert the hand within the uterine cavity and peel the placenta off from the uterus, retaining the hand within the cavity. He has great confidence in hot intra-uterine douching with sterile water for hemorrhage, and in addition often employs lysol or creolin in a 1 per cent. solution, using a long, curved, grooved glass nozzle, which he considers especially valuable. It gives a good flow, can be sterilized by boiling, is cheap, and if made of heavy glass is not easily broken.

He condemns the use of iron within the womb, but has found abundant evidence of the value of intra-uterine packing with iodoform gauze. He allows the gauze to remain for twenty-four hours or more.

He has used saline injections into a vein, into the rectum, and into the cellular tissue, but considers the injection of such fluid into the cellular tissue most valuable. In considering traumatic post-partum hemorrhage he draws attention to the familiar and interesting fact that the worst tears of the cervix and pelvic floor are in cases of spontaneous delivery. He sometimes employs the forceps successfully to prevent tears. He would close the cervix by stitches for extensive tears, with or without hemorrhage, and would invariably close all extensive wounds of any part of the genital tract. If hemorrhage continues after labor he would thoroughly explore the uterus with the finger, to remove whatever might be there, or would use the douche curette. The debilitating effect of hemorrhage is fully described, also its important influence in lessening the patient's power of resistance to septic infection.

The writer describes a hæmatoma as a form of post-partum hemorrhage. This commonly arises from ruptured veins in the broad ligament, in the vagina or vulva; fluctuating swelling in the pelvis is the sign of such a condition. Should the clot become septic the cavity must be opened at once, thoroughly washed out, and packed with iodoform gauze. Should the cavity not become infected the patient should be kept absolutely clean and absorption favored by promoting her general condition and by avoiding severe and injurious pressure.

Post-partum Hemorrhage in an Opium Habitue. J. T. Kidder¹ reports an interesting case in which he was called to see a patient in labor with her fourth child. Her face was flushed and pulse full and forcible. It was found that she was an opium eater, and had taken a considerable quantity to relieve her pains. The labor was easy, but delivery was immediately followed by a frightful hemorrhage. The hand was introduced into the womb and the secundines delivered, but the bleeding persisted until ice was introduced. The patient was very low, but rallied after stimulation, bandaging of the limbs, etc. The child died in tetanic spasms thirty-six hours after birth. Four years later a similar scene was enacted, the child dying as before, in spasms.

Her first three labors before she contracted the opium habit had been normal; no hemorrhage, and the children all lived.

The action of opium is somewhat analogous to that of alcohol—stimulating in the first instance, increasing the action of the heart and arteries, and thus favoring hemorrhage. Opium has been recommended in uterine hemorrhage by high authorities, but that is simply for its quieting effect upon the system.

In regard to the death of the infants from spasms, cases are recorded by Tralles, Credé, Harl, and others, of convulsions, and even death, following moderate doses of opium administered to young children. And since opium is rapidly absorbed and carried by the blood to all parts of the system, the child *in utero* must undoubtedly be affected by the constant and excessive use of the drug by the mother, and be continually supplied with it as long as gestation lasts. After delivery the child must depend for its supply of opium upon the mother's milk, which might furnish it in undue proportions, causing a loss of balance in the nervous force, with resulting convulsions and death.

¹ Massachusetts Medical Journal, May, 1899.

² Monats. für Geb. und Gyn., Bd. ix., Heft 2.

INTESTINAL OCCLUSION IN PREGNANCY AND LABOR.

Meyer¹ reports three cases of this rare complication. He relates three cases of ileus complicating pregnancy. In the first a loop of intestine was found to be strangulated in an opening in the broad ligament; an abdominal section was performed and the patient was safely delivered a short time after the laparotomy. In the second case the transverse colon was constricted by a congenital anomaly of the mesentery, and the woman succumbed when operated on after delivery. A third instance of ileus at term which ended favorably may be attributed to simple coprostasis, or quite possibly to a volvulus of the sigmoid flexure. Apart from the strangulated hernia, Meyer points out that strangulation of the intestine is a rare complication of pregnancy and labor, occurring only twice in 50,000 cases at the Copenhagen Maternity, and, as far as he can gather, recorded only thirteen times before his three cases. In 3 of these 16 the cause of the occlusion was not discovered; in 7 it was due to a band or to peritoneal adhesions; 2 were instances of volvulus; 2 the results of uterine deviation, and 1 of an ovarian cyst; in the remaining case there was stricture of the intestine. Ten patients of the 13 in which the case of strangulation was discovered died; in the other 3 the ileus was treated without consideration of the pregnancy, while every case in which an attempt was made to treat the occlusion by emptying the uterus, or in which delivery was waited for or expedited, terminated fatally, even when laparotomy was performed after the birth of the child. Evacuation of the uterus never gave permanent benefit, though it was sometimes followed by passing amelioration, which was dangerous by raising false hopes and delaying intervention beyond the favorable moment. Meyer, therefore, concludes that the ileus should be treated independently of the pregnancy.

The author knows of only three cases in which labor has been complicated by strangulated hernia (two umbilical); but this accident has been recorded twenty-seven times as occurring during pregnancy, M. Bar's case of incarcerated diaphragmatic hernia included. Meyer formulates the same rule of treatment for such cases as for ileus.

Obalinski¹ says that whenever with the general symptoms of ileus, obstipation, vomiting, and hypogastric pain there is local meteorism and increased peristalsis, or either of these important phenomena, one is justified in attributing the occlusion to some mechanical impediment, to be removed only by operation. Laparotomy should be performed within two or at most three days. Other cases of occlusion with general meteorism are to be treated by internal means, especially opium and clysters.

¹ Heilkunde, April, 1899.

PUERPERAL SEPSIS.

The Bacteria in the Puerperal Uterus. Stahler and Winkler¹ give the results of investigations which they have conducted in examining bacteria found within the puerperal uterus.

In the greater number of cases when fever was absent the cavity of the womb was found sterile; but in perfectly normal patients living saprophytes are found which create no symptoms so long as their products are discharged with the lochia. It is most probable that the less poisonous forms of bacteria can produce a mild inflammation of the endometrium without a rise of temperature above 100° F. In a third of those cases in which the patient had a temperature above 100° F. the cavity of the uterus was found to contain germs which proved to be anaërobic bacteria.

After a long article, in which he tabulates his bacteriological and clinical researches with reference to slight elevations of temperature during the puerperium, Franz² tabulates the results and conclusions of his work as follows:

1. Slight elevations of temperature during the puerperium are usually caused by saprophytes which gain access to the uterine cavity.

2. The saprophytes themselves do not cause fever. It develops only when the outflow of the bacteria-containing secretion is prevented.

3. The saprophytes which are found in the uterus in cases of slight elevation of temperature are probably identical with the saprophytes of the vagina.

4. Internal examination is usually a factor in causing slight elevations of temperature, only in so far as it causes vaginal wounds which serve to further the development of the bacteria, which are always present.

5. Slight elevations of temperature occur oftener by half in primiparæ than in multiparæ.

6. Diminishing the duration of the third stage increases the number of slight elevations of temperature.

7. Long duration of labor, long duration of the expulsive stage, and premature rupture of the membranes have but little influence on the production of these cases.

The Clinical Study of Puerperal Fever. In Mermann's clinic Peiser³ has investigated a series of cases in which no vaginal douche nor intra-uterine douche was given either before or after labor. The number of cases was 2701. In so far as possible no vaginal examina-

¹ Monatsschrift für Geburtshilfe und Gynäkologie, 1899, Band lx., Heft 6.

² Obstetrics, May, 1900.

³ Archiv für Gynäkologie, Band lviii., Heft 2.

tion was made, but pelvimetry, palpation, and auscultation were carefully practised. Most strict external antisepsis was carried out, and nurses and attendants were changed as seldom as possible, to avoid confusion.

The practical conclusions from his cases, which include operative as well as normal births, are strikingly in favor of the treatment employed.

The mortality was 0.55 of 1 per cent. from all causes. When these cases were analyzed it was found that none of them had been infected in the hospital, and of these only a small portion died of septic infection. The writer believes that stringent asepsis, omitting all interference with the genital organs, gives the best possible results.¹

Puerperal Septicæmia. Mace² has been led to try the treatment of puerperal septicæmia by cold baths on account of the successful result obtained by this method in a very severe case. He believes that it is contraindicated by peritonitis, phlegmasia alba dolens, cardiac asthenia, and myocarditis. He employs baths every two or three hours at a temperature not below 77° F. Fouchier, on the contrary, uses this treatment only when the heart becomes weak and urine is diminished, and he does not allow the temperature of the bath to be less than 72° F. Charles also states that the chief use of the cold bath is to stimulate the heart, nervous system, and the organism as a whole. He calls attention to the fact that antistreptococcic serum may be inefficient, as several varieties of the germ exist. Denys claims to have differentiated sixteen of these, and gives a dose of 100 c.cm. of their mixed serums. Herbert has obtained four cures of severe cases by this method.

SEPTIC EMPHYSEMA OF THE UTERUS. Halban³ describes, perhaps for the first time, a condition which he terms "gas sepsis," of puerperal origin. Under the influence of a gas-forming bacterium there is an enormous production of air-bubbles in the uterus and later in the blood and viscera.

The patient had been pregnant three times, the second pregnancy having resulted in abortion. Both the labors required manual separation of placenta. Five years before admission vaginal coeliotomy was performed for an ovarian cyst. The fourth pregnancy terminated in spontaneous labor at term, but the child was in a transverse position, the pains were feeble, and the cervix 4 cm. in length. It was, therefore, resolved to perform accouchement forcé. The cervix was dilated by the colpeurynter, and podalic version, with extraction of a foot, was brought about by Braxton Hicks' method. The labor, even with these various aids, was extraordinarily slow, and it became necessary to aban-

¹ Archiv für Gynäkologie, 1899, Band lviii., Heft 2.

² Congress Obstetrical Society of France, April 6, 7, and 8.

³ Schauta's Festschrift, Monatsschrift für Geburts. und Gynäk., January, 1900.

don all attempts at extracting the after-coming head, which was perforated, the child having already perished. After extraction hemorrhage set in. The placenta, being adherent, required manual extraction, after which the bleeding was checked by hot lysol irrigations.

The patient appeared to be doing well after delivery, save for a paradoxically rapid pulse. On the following day, however, tympanitis of the uterus was evident. It was at first supposed that air from without had gained access to the womb, but attempts to void it were fruitless. It was then observed that a gangrenous condition was developing in the vagina and vaginal portion of the cervix. Professor Schauta, therefore, made a diagnosis of spontaneous formation of gas in the uterus. An emphysematous crackling was now observed on palpation of the abdomen, although the subcutaneous tissues contained no air. The patient died on the third day post-partum. The temperature was never much raised, although the pulse continued high. Icterus, albuminuria, and glycosuria bore witness to the presence of a toxæmia.

Autopsy. Incision through the skin of the thorax and abdomen was attended by a hissing escape of gas. The cellular and adipose tissues contained an abundance of air-bubbles. When the abdominal cavity was opened a large amount of ill-smelling gas was liberated. Air could be felt in the right auricle. Pea-sized gas-bubbles were visible on section of the liver and spleen. The uterine wall was enormously thickened, and was infiltrated with gas to such an extent that the organ readily floated in water. The cavum uteri, however, contained none of this gas.

Bacteriological investigation confirmed the belief that in this case a rare and fearful form of puerperal infection was present. The germ found was cultivated, cultures of which induced a similar emphysematous affection in guinea-pigs, rabbits, and white mice. It is regarded by Halban as akin to the ordinary bacilli of putrefaction. Side by side with the formation of putrid gases was found a mortification of the muscular fibres of the uterus.

The Decadence of Antistreptococcic Therapy in Puerperal Sepsis, and the Efficacy of Cold Bathing. An important abstract in *Obstetrics* of June, 1899, summarizes an article read before the Société Obstétricale de France, as follows: Mace stated that there were but three plans of treatment, viz., antithermic (quinine, antipyrine), refrigerating measures, and serotherapy. He hastened to say that serotherapy had proved a failure and was rapidly being abandoned, and the Institut Pasteur itself admitted that the action of the Marmorek serum was unsatisfactory. Refrigeration, as limited to general baths (a method advocated by Mace as far back as 1894), has many advocates. There are, however, three contraindications, viz., phlegmasia alba dolens, peri-

tonitis, and septic cardiac affections. If the heart acts regularly the baths may be given in conjunction with caffeine, to strengthen its action. If the myocardium is implicated, with irregular heart action, the baths must not be given.

Fochier, of Lyons, stated that the results of cold bathing in puerperal sepsis were not to be compared with those obtained in typhoid fever. He gives the bath at 24° C. and upward, and the leading indication, in his judgment, is scantiness of the urine. Lowering the temperature does not help the patient, but the benefit is derived from the action on heart and kidneys. He cited a bad case of sepsis in which a bath at 27° C. was followed by diuresis and prompt amelioration.

Charles, of Liege, does not regard the cold bath as antithermic, but as a roborant of the nervous system, heart, and vital functions in general; in a word, it is a fortifier against microbic invasion. He did not get good results from the method known as "abcès de fixation." The failure of Marmorek's serum is doubtless due to the number of varieties of bacteria which can cause sepsis (according to Denise, of Tourian, not less than fifteen). Denise has prepared a serum of his own, to be used in very large doses; and recently Hubert, of Brussels, got recovery under its use in four severe cases. Charles himself had had a case of failure with Denise's serum.

Mace, concluding, stated that he used the cold baths at a temperature of 25° C., but had occasionally gone still lower to obtain the desired reaction.

The Surgical Treatment of Acute Puerperal Sepsis, with Special Reference to Hysterectomy. Vineberg¹ has given us an exceedingly clear and full paper, which cannot fail to prove of value to all obstetric surgeons and to the general practitioner as well.

The author first defines acute puerperal sepsis as "an infection that takes place either shortly before, during, or immediately after labor; that manifests itself by symptoms during the first week of the puerperium, and in which the symptoms persist continuously, with variable severity, until the disease ends in death, in a cure, or passes into a chronic state." He has collected thirty-six cases of puerperal sepsis in which death occurred from the eleventh to the fifty-fifth day, the average being on the twenty-third day, thus showing that all cases of fatal acute puerperal sepsis by no means terminate during the first five or ten days.

The author advocates as a preliminary step in the treatment of every case of puerperal sepsis a careful and thorough examination of the perineum, vagina, and cervix, followed by a bimanual examination of the

¹ American Journal of the Medical Sciences, February, 1900.

uterus, adnexa, and pelvic connective tissue. If an ugly-looking wound is found at the perineum, on the posterior vaginal wall, or high up in the vault of the vagina, and the uterus is found fairly well contracted and corresponding in size to the normal one at that period in the puerperium, the interior of the uterus is left absolutely undisturbed and the whole attention directed to local treatment, as in any infected wound. To this local treatment the physician should give his personal attention at least twice in the twenty-four hours.

When it is suspected that the interior of the uterus is also infected, but the matter is in doubt, the patient is etherized and the interior of the uterus explored with the finger, the curette, or both.

If no evidence of uterine involvement is found no further attention is given to the cavity; but if a large, flabby uterus is found, with placental and decidual residue and débris of fetid odor, the interior is thoroughly curetted with the sharp curette and drainage maintained by the introduction of two large rubber catheters, which are left *in situ*. Irrigation is carried on through these at frequent intervals. The catheters are removed and cleaned every twenty-four hours. The author considers that the majority of cases of uterine sepsis, even those of the serious type, will yield to this treatment, if faithfully carried out. He has treated fifteen cases by this method during the last three years, all of which recovered. There are, however, cases occasionally met with that do not respond to this treatment; the patient grows more profoundly septic, as manifested by the pulse and other well-known signs, and to an experienced observer it is evident that she is not holding her own, but losing ground. Something more in these cases must be done immediately.

If on careful examination no exudate can be detected in the pelvis to account for the increased manifestation, the author opens the abdominal cavity, and is guided in further action by the conditions revealed. It will usually be necessary to perform complete hysterectomy. The author places no reliance upon bacteriological examination of material from within the cavity of the uterus, believing it to be unreliable and an unsafe guide.

Eight illustrative cases where operation was considered advisable are given in full detail. In the class of cases in which collections of pus have formed the abscess cavity should be drained whenever and wherever found. When hysterectomy is to be performed the author prefers the abdominal route, on account of the friability of the tissues and the greater danger of hemorrhage when operating by the vaginal route; also because it enables drainage both by the abdomen and per vaginam. A summary of the points made in the paper is as follows:

1. Puerperal sepsis is wound fever or wound infection, and wound

infection in the female genital canal, as elsewhere, calls for surgical measures, such as free drainage, irrigation, and the removal with a sharp instrument of any débris or exudate that may form on the surface of the wound. These means failing to accomplish the desired result, removal of the diseased organ or organs as a last resort is indicated.

2. In a given case of puerperal sepsis a thorough search is to be made of the whole of the genital tract, in order to determine the site of the original infection.

3. If this source is situated in the uterus, curettage, drainage, and irrigation are to be employed in 95 per cent. of the cases of puerperal sepsis nowadays met with, this plan will be all that is necessary to bring about a cure.

4. In the remaining 5 per cent., roughly speaking, these measures will not be sufficient to arrest the progress of the infection, as will be evidenced by the pulse, temperature, general course of the disease, and sometimes by local signs. An exploratory laparotomy is thus indicated, the further course to be guided by the pathological lesions found. In most of these cases hysterectomy will be required.

5. When large collections of pus form and are so situated that they can be readily reached either with a vaginal incision or with one above either of Poupart's ligaments, no time should be lost in resorting to surgical relief. When, however, they are not favorably situated, judicious delay is advisable, with the hope that ultimately the pus may be evacuated without the risk to which the patient would be exposed by a more radical procedure, but affords her an opportunity of being restored to health with the conservation of her sexual organs.

The Extirpation of the Septic Puerperal Uterus. Prochownick¹ draws attention to the fact that the mortality of the puerperal state has not been lessened as greatly as was hoped when antiseptic precautions began to be taken in labor. He estimates that in Germany from three to four thousand deaths occur yearly from puerperal septic infection, and that there are from eight to ten thousand cases in which death does not occur, but in which the patient's health is more or less damaged. He has found the treatment by serum useless, and has given attention to the problem of finding out when the septic puerperal uterus should be extirpated.

It is evident that this serious procedure is justifiable only when it is positively known that the uterus is the site of the infection, when other means have been employed without result, and when the patient is evidently growing worse. He calls especial attention to the importance

¹ Monatsschrift für Geburtshilfe und Gynäkologie, 1899, Band 1x., Heft 6.

of studying each case during the first two days of the puerperal period without disturbing the patient by prolonged examinations. Each puerperal patient who has fever should be kept as quiet, as clean, and as comfortable as possible. The pulse, temperature, and respiration should be carefully recorded every four or six hours. Especial importance is attached to the condition of the pulse. The intestine should be emptied once in the most thorough manner possible. The patient should be examined once very carefully and thoroughly. If the pulse reaches 100, the heart, the lungs, and the spleen should be examined thoroughly, and the urine should be taken by catheter and subjected to examination, and the lower portion of the birth-canal should also be examined. Lacerations, either closed or without suture, and fissures in the perineum and vagina should be thoroughly examined. If no focus of infection is found, and the pulse does not exceed 100, no further examinations of the birth-canal should be made.

When the patient's condition is serious, and she has chills, high fever, a small and rapid pulse, the vagina should be douched with warm, sterile water, and some of the lochial discharge should be taken from the cervix. A careful bimanual examination should also be made. These measures, however, can rarely be carried out satisfactorily in private practice, and it is evident that some other method giving positive information is very desirable.

For some time the writer has practised the regular examination in such cases by taking cultures of blood. The region of the elbow and the forearm are antiseptically prepared, and with a sterile syringe 10 cm. of blood are taken from a vein and a portion of it mixed with sterile bouillon, and the remainder placed in a sterile glass as soon as possible. Cultures are made from this blood and incubated, and in from twelve to twenty-four hours the results may be obtained. In his experience a fatal result has occurred in each case in which streptococci were evidently present in the blood. When, however, the blood was free from germs, all of the patients recovered but two, who perished from purulent peritonitis occasioned by streptococcus invasion through laceration in the vagina and cervix. When, however, it was impossible to remove suppurating decidua or pieces of placenta or moles, or when after labor myoma had become infected, and when the patient had a small and rapid pulse and distention of the uterus and abdomen, the cultures from the blood were positive and the cases demanded the removal of the uterus. Cases of incomplete abortion furnished many of these patients.

He also raises the question as to whether the removal of the uterus is not more appropriate in cases where rapid absorption of toxins is going on from the uterus rather than where virulent bacteria are found within the blood. While this query is difficult to answer, he draws attention

to the fact that a negative culture from the blood in a severe case shows that typical pyæmia is not present, but does not make sure a favorable result.

This method of examination is especially useful in preventing useless and harmful local interference. It especially justifies the absolute rest-treatment employed in the first days of a septic case. When the cultures of the blood remain negative the uterus should be cleansed and douched with 50 per cent. alcohol, and, should improvement not follow, its expiration must then be seriously considered.

The writer sums up his experience by stating that he cannot decide upon extirpation of the uterus from the results of examination of matter taken from the vagina or uterus, but that he considers the examination of blood of far more importance. If pyæmia is present, complicated with tumors on the pelvis, suppurating portions of the ovum or septic criminal abortion, extirpation of the uterus is not indicated, because it can rarely save the patient. If, however, it is evident that the uterus alone is pyæmic, and that these complications are not present, then the removal of the uterus may be followed by a good result.

Grimsdale¹ reports a case of streptococcus infection which appeared on the second day after labor, and which he treated with serum injections. The first injection was made on the ninth day, when streptococci were found in the blood. Two doses were given, and the temperature fell to normal in twenty-four hours, and then rose gradually. Injections were kept up for fifteen days, until the blood examination was negative. The patient was discharged cured.

Ostermayer,² of Budapesth, relates a case of recovery from sepsis in which the symptoms had appeared to surely point to a fatal termination, and which he cured by the free use of normal salt solution. The recovery under this remedy was prompt and striking. The first favorable report from the use of this remedy in sepsis, in Germany, had been made by Eberhart, in September, 1898, and had influenced Ostermayer to make use of it in the present case. Before the application of the salt solution the patient was in a condition of extreme adynamia, temperature subnormal, and pulse and respiration appeared to show that the patient was *in extremis*. Ordinary stimulants and attempts at forced alimentation met with no response. The first injection of the solution beneath the skin of the infraclavicular fossa brought the pulse up somewhat. The treatment was pushed twice daily. For several days the patient seemed to be merely maintained in *statu quo*, without improvement in prognosis, but eventually it undoubtedly saved her life.

¹ British Medical Journal, January 14, 1899.

² Centralblatt für Gynäkologie, 1899, No. 12.

Gonorrhœal Puerperium. Charles Greene Armstrong¹ says, after an exhaustive survey of the literature of the subject in French, German, and English: "One thing stands out plainly, and that is that no definite symptomatology or manifestations of a gonorrhœal process during the puerperium can be described." No elevation of temperature occurs if the process does not extend above the internal os, and, as Schauta remarks, "a gonorrhœal catarrh of the cervix may extend to the endometrium without giving rise to any serious symptoms." In some of the cases recorded there was an extension of the process from the uterine mucosa to the peritoneum without any elevation of temperature. If a rise of temperature does occur it may take place as early as the third day of the puerperium, though in the majority of cases quoted the rise of temperature occurs late in the puerperium. The acuteness of the progress of the affection in the early puerperium depends upon the virulence of the gonococcus, and whether there be a mixed infection or not. Gonorrhœal infection during the puerperium runs a milder course than other septic processes occurring during the lying-in period. This milder course does not indicate that the process has been cured; the gonorrhœal puerperium is extremely chronic, and defies treatment just as much as gonorrhœal processes in general in the female. Purely clinical symptoms are not sufficient to base a diagnosis upon; the secretions must be examined bacteriologically.

A chronic gonorrhœal process of the cervix should not interfere with the entrance of spermatozoa within the uterine cavity, because the cervical secretions are scanty. If the entire extent of the endometrium be invaded by the gonococcus the possibility of an impregnated ovum becoming attached to the uterine mucosa is slight. If the endometritis has become chronic, the cylindrical epithelium has become regenerated, and only a few spots of pavement epithelium invaded by the gonococcus remain, then pregnancy can take place and go at least to the seventh month or eight month. If, however, there is metritis with hypertrophy of the connective tissue, then the insufficient elasticity of the uterus will mechanically act against the development of the organ when pregnancy takes place, and the result will be an early miscarriage.

It is difficult to explain why a large number of women recover from gonorrhœal infection without the slightest trace of the disease remaining, while others from the moment of infection remain sufferers for the rest of their lives. Some inherent weakness of the epithelium may account for those cases where the process persists. "An infantile development of the female and her genital organs should also be considered an excellent soil for the development of the gonococcus, as has been

¹ American Journal of Obstetrics, October, 1899.

pointed out by Freund, and reddish blonde and light blonde females are certainly more severely affected by gonorrhoeal infection than are darker complexioned subjects, and here the diathesis of the individual certainly acts as *locus minoris resistentiæ*."

PUERPERAL INSANITY.

The American Gynecological and Obstetrical Journal, of May, 1900, prints an interesting abstract from the *Medical Record* on "Puerperal Insanity," by William Hirsch. The writer says that comparatively few psychiatrists now believe that puerperal insanity constitutes a distinct class among the various psychoses, so that if gestation has any part in the production of insanity, it is simply as one of many etiological factors. The different psychoses observed during the stages of gestation are the same as those seen in other patients.

It is difficult to obtain accurate statistics as to the frequency of puerperal insanity, and the figures quoted are often misleading. If it is considered that the stages of pregnancy and lactation take nearly two years, and that in some countries the average woman has five or six children, it is evident that if these women have any mental disorder at all between the ages of twenty and forty years they have 50 per cent. of chances to be classified as puerperal cases. It remains to be proved that these women would not have acquired the disease as readily without pregnancy. Ripping reports 21.6 per cent. of puerperal psychosis in an institution for the insane filled with patients from the lowest walks of life, while a report from a large private asylum patronized by the wealthy classes shows only 12.5 per cent. These figures do not prove that insanity is more frequent among the poorer classes, for quite the contrary is the case, but that women of these classes bear many more children, and so mental disorders happen more frequently to be associated with gestation. French statistics show a very low rate of puerperal psychoses, for the simple reason that French women have fewer children, yet insanity among French women has a higher percentage than in any other country. These figures would seem to show that gestation is a subordinate factor in the production of mental disease.

Moreover, if childbearing really played an important rôle as an etiological factor it would be expected that in cases of so-called puerperal insanity other factors should be less than in ordinary cases of insanity. On the contrary, heredity—a most common factor—occurs in 66 per cent. of these puerperal cases—a higher rate than is usual in insanity generally. Then, too, insanity should be more common among women than among men; but, if anything, it is a trifle more common among the latter.

Any pregnant woman may as easily acquire a mental disease as any other woman. The prognosis depends upon the history, heredity, health, and general classification. The important question in the psychoses of pregnancy is the expediency of emptying the uterus. As far as any direct bearing upon the offspring, authorities differ, but the writer's opinion is that, aside from heredity, the child will not be influenced by any mental disease of the mother during pregnancy.

In reference to the welfare of the patient herself, if she is physically in good condition there is no ground for interference. Some classes of melancholics lose weight and strength rapidly and refuse to take food, so that the nutrition can be maintained only with great difficulty; in such cases the pregnancy should be terminated; so, also, in cases of acute mania.

There are certain cases of hysteria in which the fear of having children is apt to produce a severe mental disorder. These cases present a difficult problem, and can only be settled according to the individual case.

During the process of parturition transitory disturbances of consciousness sometimes occur. This is most common in unmarried women, in whom the natural excitement is increased by shame and sorrow. These cases resemble psychical epilepsy; the patient becomes suddenly agitated, with flushed face and staring eyes, and the actions are impulsive and inco-ordinated. This condition usually lasts only a few hours, but is of medico-legal significance, as many cases of infanticide are due to it.

Psychoses which occur in connection with parturition are produced (a) by trauma in cases of difficult labor, (b) by anæmia and exhaustion after severe hemorrhage, (c) by intoxication in septic cases or cases with local inflammation or uræmia. The clinical symptoms of these psychoses consist of actual delirium, which either leads to recovery after a short time or passes into secondary psychosis. The clinical features have nothing specific, similar cases being produced by like causes in the non-pregnant state.

Lactation, as such, plays no rôle in the production of insanity. It is due to other circumstances, as during the first few months after delivery women are predisposed to nervous and mental diseases.

NEONATAL PATHOLOGY.

J. W. Ballantyne has given us, in the *Journal of the American Medical Association*, November, 1899, an article on the "Antenatal and Intranatal Factors in Neonatal Pathology," in which he attempts to explain the peculiarities of the morbid state in the new-born. He says that the period of life which has been termed "the new-born infant"

may be regarded as beginning with the first maternal labor pain and ending at about the close of the first month of life. The physiology and pathology of this period differ so markedly from the conditions peculiar to other periods of extra-uterine life that a nomenclature has arisen in which the term "neonatorum" is added to the name of the disease.

This neonatal period may be divided into the intranatal, during which the child is passing through the birth-canal, and the truly neonatal, during which the child's organism is adjusting itself to its environments.

That birth, even under so-called normal conditions, is a period of traumatism to the infant, cannot be denied. From five to six days are required for the cranial diameters to regain their antenatal relative length. While it may be said that this head-moulding is so constant as not to be considered pathological, yet the same amount of distortion produced by any cause acting after birth would certainly be regarded as morbid. The cranial deformity may be intensified by what is called "caput succedaneum," in its morbid anatomy simply a bruise. Facial paralysis may be due to pressure from the contracted maternal pelvis or the forceps on the facial nerve at the point of emergence. Fractures of the long bones, dislocations, and wounds of various kinds occur during birth. Hemorrhages into the cranium and spinal canal, the kidneys, liver, stomach, intestines, testicles, and into the sternomastoid and other muscles are often the result of traumatism of birth. A case of foetal intestinal obstruction was found by Spencer to be due to hæmatoma of the cæcum, which had blocked the bowel.

To this list of traumatisms must be added the intranatal infections, such as gonococcic infection of the eyes, the vulva, or vagina of an infant from maternal secretions. This latter danger is a strong argument in favor of thorough cleansing of the vaginal canal during labor. The period of readjustment subjects the infantile organism to a severe strain, and while not in itself pathological it may at any moment become so. The change from an intra-uterine, almost parasitic life to an extra-uterine and independent one is tremendous. The umbilical vein, which had been the channel of supply, may become an avenue of infection. Streptococci may gain entrance, giving to erysipelas neonatorum its peculiar character. The fatality of germ infection in the new-born is terrible, and the low power of resistance to pathogenic microbes has been ascribed to various causes. The physiological desquamation of the cuticle renders the entrance of germs easier; and, again, the internal defences are weak, as is shown by defective phagocytosis and the feebleness of the febrile reaction. The thymus and thyroid, which perhaps form the beneficent phagocytes during intra-uterine life, cease at birth to do so actively, while the spleen and lymphatics are not yet in full working order.

The so-called idiopathic icterus neonatorum has many pathogenic explanations attached to it, but all point to the factor of physiological readjustment. The new circulatory requirements fail to be complied with in some way. But neither the traumatism of birth nor the difficulties surrounding the adjustment to new environments will satisfactorily explain all the morbid conditions often present in the new-born. The impress of nine months of active intra-uterine life is on the infant at birth. Its effects, pathological as well as physiological, are projected into neonatal life.

Jaundice in the new-born cannot always be due to the readjustment of the organism. Syphilitic hepatitis or congenital obliteration of the bile-ducts may cause fatal cases of icterus neonatorum.

Facial paralysis, though usually due to birth traumatism, may be due to a morbid antenatal state; in such cases the paralysis persists for a long time. Dislocations of the hip and club-feet are no longer considered as accidents at birth, but are attributed to several antenatal causes. External violence to the mother's abdomen during pregnancy; pressure of the amniotic fluid; primary alteration of the nervous system, causing either reaction or paralysis of the peri-articular muscles, and intra-uterine destruction of the tissues of the joint are theories based on foetal pathology; but embryonic morbid changes and arrested development of the acetabulum or other parts have been also adduced in explanation.

Fractures in the new-born usually point to birth traumatism, but very often the predisposing cause lies in deficient ossification.

Scleroma neonatorum was supposed to result from chilling of the new-born infant, but congenital anomalies of the lymphatics or antenatal lesions of the thermic centres are now considered better explanations. In two cases under the writer's observation congenital absence of the vernix caseosa was followed by severe eczema.

It is evident that these three factors must all be considered if the characters of the diseases of new-born infants are to be understood.

Wounds of the Foetal Eyes Occurring during Labor. Cramer¹ reports the case of a multipara who had a contracted pelvis complicating disease of the hip-joint. Labor was induced, the forehead presented, and the forceps was applied as well as possible to the sides of the head, the edges of the blades bearing upon the outer edges of the orbits. The child was delivered with considerable difficulty.

Soon after its birth bleeding occurred from the left eye. Upon examination a depressed fracture of the left side of the forehead was found, and crepitation was discovered about the middle of the left orbital arch. Upon opening the eyelids the cornea soon collapsed, and the fracture

¹ Centralblatt für Gynäkologie, 1899, No. 27.

of the outer table of the skull had apparently torn the sclera. Under antiseptic precautions these wounds healed without infection. The eye, however, was lost through absorption of its liquids and collapse of the chambers of the eye.

The writer quotes the principal papers extant upon the subject, which show the accident to be a rare one. It is ascribed in this case to the contracted pelvis, the unfavorable presentation, and the necessity for applying the forceps in the manner described. Dr. E. P. Davis, commenting on this case in the *American Journal of the Medical Sciences*, December, 1899, describes a case of hemorrhage from the conjunctiva which he had under observation at the Jefferson Maternity, which at first sight was suggestive of possible traumatism. On examination, however, this was found to be impossible, and the reason for the hemorrhage was evidently in the condition of the child's blood. The case was referred to an ophthalmologist, and the child ultimately recovered, with the preservation of the eye. A similar accident to the one reported by the writer is sometimes seen after version in highly contracted pelves. It is, however, rare in these cases, and should very seldom happen under the use of the forceps.

Resuscitation of the New-born. In a well-written article on "Resuscitation," in *Obstetrics*, the writer says editorially: "In a thousand cases of resuscitation the 'safety-point' will be reached in ten minutes with 60 per cent., in fifteen minutes with 25 per cent., in twenty minutes with 10 per cent., and twenty-five minutes with 3 per cent., and the remaining 2 per cent. through a period up to an hour and more."

So long as the foetal heart action continues, resuscitation is possible, and this automatic, rhythmical action continues much longer than is generally supposed. Neugebauer¹ reported the continued contractions of the heart of a fourteen-weeks'-old embryo for three hours, pulsations occurring every two or three minutes. Optiz² reported two cases of foetus at term, with the heart beating for thirty minutes, and capable of further contractions after removal under stimulation of a needle. Much longer cases of post-partum heart-beating with respirations have been reported, and no doubt many a still-born child has been laid aside as dead whose heart was still contracting. The ideal method of resuscitation will use the best combination of all aids to respiration—vascular and cardiac circulation and equilibrium. Blood communication between child and placenta should remain unimpeded; the uterus should not be handled unless it is bleeding; alternate compression and expansion of the chest should be achieved with freedom; insufflation should be avail-

¹ Centralblatt für Gynäkologie, November 26, 1898. (See *Obstetrics*, January, p. 21.)

² *Ibid.*

able if required, alternate applications of heat and cold, spanking, throat cleansing, stretching of the sphincter ani, traction of the tongue, and use of the now ubiquitous electric current; but, above all, should be included the preservation of the body heat up to the normal temperature.

We have employed the following method of resuscitation for over a dozen years, with growing favor: A vessel one and a half by two feet and six inches deep is half-filled with water as hot as the hand can comfortably bear, and brought close enough to the mother to receive the child without causing traction on the cord. The child is held with the back of the neck resting in one hand and the posterior knee and thigh surfaces in the other. It is then immersed in the hot water and artificial chest action secured by alternately bringing the knees and head together and apart (Dews' method), the mouth being kept above the water. At intervals of ten to fifteen seconds it is dipped once in very cold water in another bowl, then immediately returned to its hot-water bath. When first placed in the hot water it will turn quite "blue," due to temporary paralysis and expansion of the skin capillaries. All other adjuvants to resuscitation can be applied, with the hot-water immersion kept up practically at the time. In the asphyxia of narcosis, anæsthesia, and cerebral congestion more time is given for the restoration of equilibrium in the circulation by sustaining the body temperature, and in the asphyxia of anæmia (pallida) the hot bath wards off the most imminent danger-cold and sustains the flagging heart. The cord must not be handled. We know that moderate manipulation of it *in utero* causes heart shock and death. The uterus must not be "Credéed." If we compress the fundus we might as well sever the cord. The foramen ovale may not close while the blood passes from the placenta to the child, nor respirations start up as promptly as our anxieties might foolishly desire, but we should not wish to have them do so, for while the mother still breathes for her child, its circulation is gaining its equilibrium.

Let us condemn and do away with for all time the aërial gyrations of Schultze's method. It is spectacular, but chilling. It is resuscitating to the operator, but deadly for the fœtal heart. It is efficient in lung expansion and compression, but no better than Dews' method. It gives the stimulation of cold air, but prevents the use of heat, which is many times more important and efficacious. It robs the child in its direct need of its second mother—the placenta, and must succeed promptly or fail altogether. It was conceived with an eye single to lung expansion, and reminds one in its narrowness of wisdom of the bear in the fable, which was appointed to keep off the flies from his master who slept. He killed one, which had alighted upon his master's nose, with a large stone, thrown with wonderful accuracy of aim, and wondered why his master did not wake up and thank him.

Speaking of resuscitation of apparently dead new-born, Francis Eustace Fronczar¹ says that Laborde's method, which consists in the rhythmic traction of the tongue by two fingers covered with a thin cloth, was first used exclusively in resuscitating the drowned, those who stop breathing under chloroform, and would-be suicides by hanging; but later it has been used successfully in asphyxia neonatorum. The number of tractions to a minute should be about twenty-five in an infant. The action results in a reflex irritation, referred to the respiratory centre through the motions at the base of the tongue, the responding nerves being the superior laryngeal, glosso-pharyngeal, the lingual, and finally the phrenic.

This method of resuscitation has many points to recommend it, and first is its extreme simplicity, other methods requiring more or less skill or experience. It should always be used while the body of the child is immersed in a warm bath, thus preventing chilling. Schultze's method, while most ingenious and feasible, has some drawbacks. It is very tiresome to the operator; it cannot be used where there is a fracture of the clavicle or of an extremity; it does not give good results in prematurely born children; and in the low rooms of the poorer classes it is often impossible. Schultze himself admits the value of Laborde's method in mild degrees of asphyxiation, but doubts its efficacy in graver cases. The writer, however, cites four cases of profound asphyxia in his own practice, in which Laborde's method was successful after the more ordinary methods, such as alternations of warm bath and cold sprinkling, insufflation, suspension by the feet, as advised by Prochownick, and Schultze's method had all failed.

Do not lose courage if the good results are long in coming; from ten to twenty minutes are often required. The tongue at first will give no resistance, soon it resists positively, then a mild respiratory movement, and then quiet. In a short time the respirations become stronger and regular and the child begins to cry.

In a dissertation published at Marburg, in 1898, Stahler describes the methods employed in Ahlfeld's clinic to resuscitate children born apparently dead. Cases in which children do not breathe, but the heart continues to beat, are described as dead but with persisting heart-action. In case of cerebral pressure the same phenomena may be observed. In four cases after the heart had ceased to beat a few respiratory movements persisted.

The methods of treatment employed were to avoid manipulation, especially in all cases where intracranial hemorrhage was possible. The child is put in a warm bath, its mouth and nose cleansed, and it is

¹ Buffalo Medical Journal, January, 1900.

closely watched. If the heart beats, and efforts are made to breathe, gentle external stimulation is practised. If the heart action fails the child is suspended by the legs for a quarter of a minute, and then air is forced into the chest by the mouth of the operator. Artificial respiration is not practised in these cases.

Incubation of Premature Infants. E. Wormser¹ has written an article on the construction, management, and dangers in the use of the incubator for premature infants which will invite the careful attention of all general practitioners. He wishes to note some of the precautions and dangers that must be considered in the construction and management of incubators. In the first place, it is necessary that the temperature should be uniform and not too high. One often finds the infants bathed in sweat when the temperature is but a trifle over the usual 30° C. The larger the incubator and water-bath and the greater the quantity of water, the more difficult it is to regulate the temperature; but every apparatus should be supplied with means for preventing variations consequent upon change in the gas pressure and outside temperature. A second point is the ventilation. In spite of the openings in the cover the air is not good, the chief fault being in the restricted size of the apparatus by which the cubic air space is reduced to a minimum. The writer calculates that the incubator at the Basle clinic, designed to accommodate six infants, allows to each child only a tenth part of the cubic air space that hygiene prescribes for an adult. Good nourishment (mother's milk) and the utmost care and attention are essential. But in spite of all these disadvantages much can be done daily experience teaches us. The smallest child treated in this way at the clinic weighed 1170 grammes when put into the incubator, and in forty days had reached a weight of 2000 grammes.

The serious danger, which gave rise to this paper, is that of choking from vomiting. A premature child was being fed every two hours from the bottle, the mother having no milk; it received its last feeding twenty-four hours after birth; when the nurse went to give the next nourishment the child was found dead; it was cyanotic and had vomited. At the post-mortem milk was found in the trachea and large bronchi. The occurrence could be credited to the incubator, for had the child been in the crib the coughing, which must have been caused, would have been observed by the nurse. From the degree of post-mortem rigidity it was evident that death must have occurred two hours previously, directly after the last nursing. For the avoidance of similar accidents it would be wise not to return the child to the incubator immediately after nursing, but only after any eructations or

¹ Centralblatt für Gynäkologie, September 23, 1899.

regurgitation of the excess of milk shall have ceased, while redoubled watchfulness must be employed at all times to guard against this rare, but most unfortunate, accident.

The Avenues of Septic Infection in the New-born. Fischl, of Prague, in an interesting monograph, holds that septic infection may gain entrance to the foetus through the placenta, the amniotic liquid, and the entire birth-canal before the birth. After the child is born the air of the room, the child's nourishment, the hands and instruments of those who care for it, its bath water, and incubator may furnish contagion. For this reason it is best not to put the child into a bath until the umbilicus has healed. The mother's breast is usually an efficient filter for any germs which her milk contains, with the exception of a few, such as the diplococcus of pneumonia.

The most usual point of entrance for septic infection in infants is the umbilicus. Next after this comes wounds of the skin received during birth, or some operation, as circumcision, eczema, syphilitic eruptions, and intertrigo. The conjunctiva is the mucous membrane most easily affected, while the nasal passages very rarely furnish a general and serious infection. The mouth, the respiratory tract, and the gastrointestinal tract are often the starting-point for a general infection of serious nature. There is frequently an absorption of toxins from these situations. It is rare for general infection to originate in infants in the genito-urinary organs.

Wounds of the Nipple in Nursing Mothers. Platzer¹ has given us a very important paper on this subject. His studies were made in the clinic at Budapesth, and his material comprised 1000 patients. He found that the only cause for lesions of the nipple in these patients was nursing. Three factors tend to bring this about: First, the bite which the child gives with its gums; second, the traction which it makes upon the nipple; and, third, the maceration of the epithelium of the nipple caused by the mother's milk and the secretions from the child's mouth. The stronger the child seizes the nipple and the longer and more vigorously it pulls the greater is the danger of wounding. Badly formed nipples are more apt to be injured than those well developed. Over one-half of the patients had lesions of the nipple, and these were more frequently in primiparæ than in multiparæ. Of the former 60 per cent. had well-developed nipples, while of the latter 90 per cent. It is found that the tendency to wounding grows less after each confinement.

These injuries may be divided into two general classes: one in which a portion of the nipple is actually removed, while in the other a superficial part of the nipple is wounded without a deep lesion. The first are

¹ Archiv für Gynäkologie, 1899, Band lviii., Heft 2.

called excoriations and the second fissures. Excoriations arise from bruising the nipple by the jaws of the child, and as a result an extravasation of the blood occurs between the epidermis and the true skin. As nursing proceeds the cover of this tumor gradually disappears, and there is formed a moist wound, which heals slowly under the constant irritation of repeated nursing.

The second class of lesions occurs where the fissure forms between the epidermis and the true skin. This fills with clear fluid, forming one or more vesicles, which disappear after several hours, leaving a crust, which is soon torn off. Under the influence of nursing this forms a wound. Maceration itself rarely causes a wound, but it is an important factor in preventing the healing of injury and in increasing the lesions. Fissures of the nipple are caused by a congenital condition of the skin covering it. The epidermis is much thinner than any other portion, and hence a wound easily occurs. This begins as a very small wound, but extends deeply into the connective tissue of the nipple. Such injuries heal very slowly, because the margins of the wound are separated at each nursing, and because of this constant irritation infection is apt to take place, with a resulting ulcer. The infection is usually mixed in character.

Wounds of the nipple usually occur on both sides, and are very apt to happen repeatedly in the same patient. They generally occur during the first week after the birth of the child, and none were found later than the seventh day of the lying-in period. Most of them heal within ten days, while some persist several weeks. During the usual period of hospital treatment 30 per cent. of fissures failed to heal, and but 15 per cent. of excoriations; 2 per cent. of cases having fissures developed mastitis, and but five-tenths of 1 per cent. of those having excoriation only.

Wounds of the nipple are diagnosticated by pain which the patient has upon nursing. In four of these cases this pain was so great that nursing was abandoned. Fever is not caused by clean wounds of the nipple. In each case where fever was present mastitis existed as a complication. Slight fever occurred where ulcers formed. The onset of mastitis was indicated by a marked rise of temperature. So far as treatment was concerned, massage and washing was sufficient in most cases during pregnancy. Compresses of 2 per cent. carbolic-acid solution were especially valuable when a wound had occurred. Dry dressings were tried, but were not found available. The mouth of the child was not washed out in these cases. Of the two treatments, the dry, sterile dressing was found the better in simple cases of excoriation; but where fissures existed, carbolic compresses were found better.

When wounds of the nipple occurred it was found very advantageous to stop nursing for one or two days, and in cases of mastitis nursing

must be suspended. The secretion of the milk did not cease in these cases unless nursing was omitted for as many as five days.

The use of the nipple shield was especially advantageous and undoubtedly prevented many wounds. Ulcers upon the nipple were washed twice daily with a 1:1000 bichloride solution and then powdered with dermatol. They rapidly cleaned in one or two days; but where mastitis was threatened nursing was at once stopped and the breast-bandage and an ice-bag applied. These measures usually sufficed to prevent the formation of pus.

The editor wishes to call particular attention to a simple prophylactic measure which for many years was followed by Dr. Ingham, of Philadelphia, in an extensive practice, with singular success. The nipples were examined daily by the physician himself with a small hand magnifying glass, and at the first appearance of a crack or excoriation the spot was touched with a stick of pure nitrate of silver. While this routine was carefully followed the doctor never had a case of abscess of the breast, either in an extensive hospital service or in his private practice. As a result of long experience in this class of cases the writer is led to believe that when suppuration occurs in the breast the pus organisms have in every case gained entrance to the breast through a break or a crack in the squamous epithelium covering the nipple; and if this entrance of micro-organisms from the nipple surface can be prevented breast abscess can be entirely avoided.

SORE NIPPLES AND MASTITIS. Rubeska¹ has observed sore nipples in 40 to 50 per cent. of nursing women. The sores usually appear on the fourth or fifth day post-partum. He advises as prophylaxis daily washings with warm soapsuds and pencilling of the nipples with 60 per cent. alcohol and glycerin every other day; while nursing, warm soapsuds and 60 per cent. alcohol twice a day. Sore nipples are treated with a wet dressing of 3 per cent. boric acid. Energetic disinfection with a 0.5 solution of corrosive sublimate, aspiration of the milk, and application of ice to the breast is Rubeska's treatment in beginning mastitis. If mastitis begins with chills and fever and painful infiltration of the glands, parenchymatous injection of 3 per cent. solution of carbolic acid (two to three syringefuls) is advocated. In the author's experience this has never caused unpleasant symptoms.

GANGRENOUS MASTITIS. H. Roger and M. Garnier² have observed a case of gangrenous mastitis in a woman suffering from scarlet fever. After recovery from the latter the mastitis subsided slowly under local treatment. These writers do not regard it as a simple complication of scarlet fever, as they have seen no similar cases in many women affected

¹ Archiv für Gynäkologie, Band lviii., Heft 1.

² La Presse Med., July 22, 1900.

with the latter disease. They believe it to have been due to a specific micrococcus which was present in large numbers, was pathogenic for rabbits and guinea-pigs, and presented certain characteristics in regard to growth on various media. A very few streptococci were also present, as is usual in complications of scarlet fever.

Massage of the Abdomen in Deficient Lacteal Secretion. Schein¹ lauds massage of the abdomen to increase a deficient lacteal secretion. It should be practised daily for half an hour or an hour, the movements being made upward from the pelvis to the breasts. With this may be associated massage of the breasts themselves. Schein's explanation is that the function of the mammary glands is intimately connected with the amount of blood brought to these glands from the genital organs by means of the vessels of the abdominal walls.

DYSTOCIA.

Veit² has given us a valuable article upon the part played by the contraction ring in dystocia. The writer states positively that he has never seen a genuine case of isolated ring contraction, and believes that a contraction of the ring retarding the birth of the child is also a myth confounded with failure of the internal os to dilate. This phenomenon is especially to be met with in transverse presentations, with rupture of the bag of waters.

In the second category Veit places those cases in which, with the head or shoulders in the lower uterine segment, the hand introduced for the purposes of version encounters a firm contraction ring.

Results of many frozen sections teach us that in the non-pregnant uterus there is nothing corresponding to Bandl's ring; neither is there in the gravid uterus of the second half of pregnancy. In the puerperal uterus, at the period of dilatation, the lower uterine segment is rather thinner than before labor sets in, while a contraction ring is still lacking; but in a section at the period of expulsion there is a distinct annular prominence, with thinned lower segment. In the post-mortem uterus we find the uterus, from Bandl's ring to the fundus, uniformly thickened, while the lower segment still remains thinned. The lesson of these sections appears to be that there is no ring except during a labor pain. We meet with it in practice if the placenta is adherent or if the child cannot advance. Not the ring alone, but the entire uterine muscle contracts. It is thus apparent that mechanical dilatation is con-

¹ Journal de Médecine de Paris, July 16; New York Medical Journal, August 5, 1899.

² Monatsschr. f. Geburts. und Gynäk., February, 1900.

traindicated, the only rational management consisting of narcotics and waiting for the contraction to subside.

After describing an interesting case of labor obstructed by an ovarian tumor incarcerated in the pelvis, and in which podalic version was successfully performed, T. Barrington¹ sums up his article with the following conclusions :

1. *The Indication for Operation.* The methods for relief of labor obstructed by an ovarian tumor in the pelvis are :

(a) Pressure reposition, tried and failed. It was not unduly persevered in, for rupture and fatal peritonitis are prone to occur. If the tumor can be pushed up out of the pelvis, forceps extraction is the ideal practice.

(b) Tapping or incision and forceps extraction are too dangerous to be recommended. The large mortality (18 per cent.) for a palliative measure and the certainty of subsequent ovariectomy in a semi-solid tumor should suffice to condemn them. At best it is a plunge in the dark, and can hardly be seriously recommended except as a makeshift. It is by no means certain in its effect of reducing the tumor bulk to permit forceps extraction.

(c) Intrapartum ovariectomy, when this can be done, is preferred to Cæsarean section ; but seeing that it involves eventration of the unemptied pregnant uterus and subsequent forceps extraction with passages improperly prepared, so that deep laceration of cervix and perineum are prone to occur, it is a pertinent question to ask if Cæsarean section cannot be carried out with much less shock and no increased risk. In his particular case he believes intrapartum ovariectomy would have been practically an impossibility.

(d) Cæsarean section was chosen because of the semi-solid character of the tumor, its fixity and incarceration, and because post-partum ovariectomy was curative. In other words, because delivery could be easily effected, and a curative measure could subsequently be carried out.

2. *The Operation Itself.* He used no elastic ligatures, for he did not wish to jeopardize the child's life or be troubled with the subsequent hemorrhage of uterine atony. The fingers of a skilled assistant are infinitely superior and quite as efficacious.

The uterine suture consisted of well supho-chromicized wallaby tendon, prepared by placing the sheathed tendons for ten hours in a 1 per cent. chromic acid solution, desheathed before use, and placed in spiritus vini recti, from which they were taken at the time of operation. He knows of no published case in which green wallaby tendon was used for the post-Cæsarean suture. As sutures for such they are ideal

¹ Australian Medical Gazette, January 20, 1900.

—thoroughly aseptic, pliable, easily tied, non-irritating, non-absorbing, though absorbable. Such sutures present all the advantages and none of the disadvantages of silk.

He adopted the following method of securing the deep sutures: As each suture was passed the incisional margins were snugly coaptated after making the double hitch of the surgical knot. By adopting the modification suggested waste of time is avoided and snug coaptation secured. Perhaps nothing is so apt to militate against success in the Cæsarean operation as a slack tie.

A Case of Congenital Diastasis of the Symphysis Pubis. At a recent meeting of the Obstetrical Society of Vienna, Schauta reported a very interesting and rare case: The patient had a separation of the symphysis pubis of 2 cm., which was congenital. The bladder, however, was normal, which is not usual in these cases, where it is almost always only partly developed. The patient gave no history of illness or injury, and had borne one child without complications. She made a good recovery from this labor, and had no difficulty in walking, either before or after labor, and never had pain in the region of the pubis. There was no evidence that caries had ever attacked this joint. On examination the separation could be plainly felt, and the ends of the symphysis seemed rounded. The pelvis was symmetrically contracted, although not excessively so. There were no signs of rickets.

In the discussion upon this remarkable case Ludwig recalled a patient who had placenta prævia and rupture of the uterus, with separation of the symphysis. The patient died in labor, and the ends of the joint were found separated 2 cm. It was thought at the time that this condition of the joint produced a pathological fixation of the uterus which favored its rupture during labor. The deformity had existed in this patient for some time, although she had no difficulty in walking, and gave no history of illness or injury. When the joint was carefully examined and the tissues were dissected a latent tubercular process was discovered in the joint, which had become a cheesy material enclosed in a fibrous sheath. Braun recalled a traumatic separation of the pubis of from 2 to 2.5 cm. occurring during labor. The recovery of the patient was slow, and four or five months elapsed before she could walk readily, wearing a double bandage.

Shortness of the Umbilical Cord as a Cause of Dystocia. Samuel M. Brickner¹ has written an interesting article on this subject, in which he says that the effect is the same whether the shortening is inherent to the cord or due to its being wound around the foetus. The cord may vary in length from two inches to several feet. To be a factor in the

¹ American Journal of the Medical Sciences, November, 1899.

delay of labor the cord must actually be so short, measured from the umbilicus to its placental insertion, that the fœtus cannot be born without one of several accidents being likely to happen. These may be : (1) Rupture of the cord at any point along its course ; (2) detachment of the placenta ; (3) inversion of the uterus ; (4) umbilical hernia in the child.

The tensile strength of the cord and the amount of the expulsive forces must be relatively considered. Careful observers have found that the average cord breaks under a strain of from eight to nine pounds, while the force of the uterine contractions during expulsive pains has been computed as being about forty pounds. It is evident, therefore, that the cord must be long enough during birth to allow the umbilicus of the child to reach at least slightly beyond the vulva. The average length of the parturient canal being about eight and three-quarter inches, the limit of safety in the length of the cord would be at least ten inches. The location of the placenta is vital in estimating the necessary length of the cord, for when the placenta lies low in the uterus a much shorter cord will permit of an easy delivery than where the attachment of the placenta is at the fundus.

The symptoms, or diagnostic points, in the order of their importance are as follows :

1. Recession of the head in the interval of pain. In uncomplicated cases there is always recession of the head after each uterine contraction ; but where there is added the elastic pull of an umbilical cord which will not permit the fœtus to maintain the advance it has made, the recession will be so rapid and so persistent as to become a striking feature in the case.

2. Arterial bleeding during and between uterine contractions. Bleeding during labor, when not due to placenta prævia, a torn cervix or vagina, always directs suspicion to the placenta ; and when it is arterial in character and persists between the pains, and is accompanied by the preceding symptom, it is usually due to a short cord.

3. Urination in small quantities in the intervals between pains after the establishment of the second stage. This symptom does not appear to have been recorded by other observers, but in the case occurring in the writer's experience it was most marked. A study of the anatomy of the parts at this stage of labor will show the significance of this symptom. In normal cases at this stage the bladder is pressed against the symphysis, while the urethra is compressed and elongated. Catheterization is difficult and spontaneous urination almost impossible ; but when the uterine contraction subsided in the case above mentioned the short cord was sufficiently strong to draw back the body, and with it, of course, the head. The bladder could then fall forward and empty itself, being stimulated to the act by its frequent compression.

4. Pain over the placental site, especially during a uterine contraction, or during the application of forceps. This naturally results from the traction on the short cord. Even depression of the placental area has been noted by some writers. Partial or complete separation of the placenta must occur where the cord is very short unless the cord breaks. In the writer's case the placenta was evidently separated, as it came away easily soon after the birth of the child, and its maternal surface was covered with a large, thick clot. This condition explains the arterial bleeding during labor.

5. The desire of the patient to sit up. Much stress is laid on this point by King, who has reported a number of these cases.

6. Uterine inertia. While these symptoms are suspicious, diagnosis of a short cord cannot be made with certainty until the birth of the child as far as the umbilicus. Where the child presents by the breech the cord may be tied and severed as soon as the umbilicus is delivered. Denman and King recommend that the mother assume a squatting or kneeling posture. Pressing the fœtus down, so that the placental insertion of the cord is brought nearer its umbilical insertion, may somewhat obviate the danger of rupture; but this procedure is not always possible. Forceps are contraindicated, as their use would probably result fatally to the child. In the case reported by the writer the cord measured ten and a half inches, and the child suffered from an umbilical hernia.

Dilatation of the Ostium Vaginæ as a Preventive of Ruptured Perineum. Macomber¹ has used the Champetier de Ribes bag for the purpose of dilating the vagina gradually, with a view of discounting the effect of the fœtal head in producing a ruptured perineum. When the os was the size of a half-dollar the bag was introduced and dilated to its full limit with water. This procedure did not interfere with the patient's exercise. When the head entered the pelvis it pressed upon the bag and made continuous dilatation of the perineum. When the bag was expelled the head immediately followed, without any laceration whatever.

The uses of the bag are as follows: Its presence in the vagina stimulates and strengthens the pains. Traction made upon the bag dilates the inferior strait in advance of the head, thus reducing the amount of moulding and shortening the second stage of labor. After the head is engaged the bag is pressed upon from behind and the perineum is maintained in a state of constant distention, which quickly paralyzes the contracting muscles; ordinarily the perineum is dilated intermittently by the advancing head during the pains, the head receding between pains. The bag is better adapted for gradual dilatation than the head.

¹ Medical Council, August, 1899.

Rupture of the Vagina during Labor. Horn¹ reports a case of rupture of the vagina during labor in a IV.-para, aged thirty-three years, who had a flat, rachitic pelvis. Before being admitted to the hospital two attempts to deliver with forceps were made and ergot had been administered; the patient was in a state of collapse, with small, thready pulse and anxious facial expression.

There was a continuous oozing of dark blood from the genitals. The uterus was contracted. Parts of the foetus apparently escaped into the abdominal cavity. Diagnosis: rupture of some part of the genital canal. The head was firmly wedged in the inlet. Perforation and extraction were performed, the latter followed by the expulsion of large masses of coagulated blood. Upon introducing the hand into the vagina the fingers entered the abdominal cavity, and it was found that the uterus was almost entirely separated from the vagina, the tear extending into the right parametrium. The condition of the woman was so deplorable that laparotomy was considered injudicious. The vaginal tear was closed by a few sutures, and the remaining gap, as well as the uterus, were tamponed with iodoform gauze. Much to Horn's surprise, the patient recovered and left the hospital four weeks post-partum.

Rupture of the Uterus. Rupture of the uterus is one of the most terrible accidents met with in obstetric practice. The following two cases well illustrate the condition and the fatal result which usually follows this accident.

At a recent meeting of the Gynecological Society of Dresden, Leopold² reported the case of a woman, aged thirty-five years, who had borne four children and who was in labor with the fifth. The left shoulder presented and the progress of labor ceased. On admission to the clinic the patient was found considerably shocked, and rupture of the uterus was diagnosticated. She was immediately prepared for operation and the abdomen was opened. Considerable clotted and fluid blood was found in the abdominal cavity. The child was lying across the abdomen, its head covered by the membranes. After the child and appendages had been removed a transverse laceration across the anterior wall of the uterus was found. This extended through the broad ligament of the right side, and the serous membrane had been separated for some extent by blood-clot.

As it was impossible to suture the uterus, it was amputated; gauze drains were inserted and the abdomen was closed. Death followed on the ninth day afterward, and post-mortem examination showed purulent peritonitis, with partial occlusion of a portion of the small intestine.

¹ Münchener medicinische Wochenschrift, 1899, No. 18.

² Centralblatt für Gynäkologie, 1899, No. 15.

Upon investigating the history of the case, a midwife had been in attendance, who had failed to promptly summon the aid of a physician.

Solowij¹ contributes the interesting report of a case of ruptured uterus in which the womb was removed by vaginal extirpation. The patient was thirty-four years of age, and had borne two children spontaneously. When admitted to the hospital the abdomen was distended and painful. The foetal heart-sounds could not be heard, and a bloody discharge was present. The placenta could be felt in the vagina, but the external os could not be reached. On introducing the hand to perform version the operator discovered that the anterior wall of the womb was torn above the cervix. The foetus was in transverse position, between the uterus and the abdominal wall.

After the patient had been anæsthetized the placenta was first removed and the right foot of the child brought down. The child was delivered without great difficulty, and its appendages were removed through the uterus. There was no hemorrhage, and the womb was readily removed through the vagina. The patient, however, perished in shock within a few hours.

When a post-mortem examination was made it was found that the tears in the uterus were extensive and that a hæmatoma had formed under the serous membrane.

A II.-para, aged thirty-four years, with flat, rachitic pelvis, was admitted to the hospital with a rupture of the uterus. Solowij² extirpated the uterus per vaginam; the patient died the following day. Post-mortem showed peritonitis and an extensive laceration of the peritoneum, the latter probably being responsible for the fatal termination. This case is an excellent example of the fact that in rupture of the uterus the organs should never be removed per vaginam, but always after opening of the abdomen, so that all injuries are under ocular inspection.

Nathan Raw³ reports a case of rupture of the uterus which occurred at full term and twelve hours after labor had commenced. The woman, who was treated by a midwife, was allowed to remain in this condition for three days, when she was brought to the hospital in a semi-conscious condition; her radial pulse was imperceptible and her skin cold and clammy. On examination a firm swelling was found in the posterior vaginal wall, the os uteri was up high, and the cord was pulseless. The cord was traced upward to the os, which was drawn up under the pubes and admitted the tips of two fingers. The os was rapidly dilated, when the placenta was found attached in the lower segment of the uterus, so that in addition there was placenta prævia to deal with. The placenta was rapidly detached, when it was found that a rupture

¹ Centralblatt für Gynäkologie, 1899, No. 13.

² Ibid., No. 15.

³ Practitioner, June, 1899.

of the posterior wall had occurred, and that the foetus lay outside the uterus in the abdominal cavity. A considerable amount of blood was lost upon the removal of the placenta, and the woman died shortly after.

External Craniometry Applied to the Artificial Induction of Labor. Dr. M. Perret¹ has written an able article in which he explains the value of external cephalometry and presents with data the statistics of a large number of cases in which this new method of procedure had proved to be of the greatest benefit.

If in the hand of the general practitioner the instrument for external craniometry shall be able to accomplish all that Perret claims for it, it will indeed prove to be of the greatest value.

The development of this method is based upon a certain number of researches, which are summarized as follows :

Having measured 120 foetal heads, with a biparietal diameter ranging between 83 and 87 mm., an average of 85.3 mm., I found that the average of the corresponding occipitofrontal diameters was 110.2 mm., a difference of 24.9 mm.

Of 97 foetal heads, having a biparietal diameter varying between 79 and 82 mm., average 80.4 mm., the occipitofrontal diameters corresponding were an average of 105.7 mm., a difference of 25.2 mm.

In 64 other cases, the biparietal diameter varying between 75 and 77 mm., the difference between the occipitofrontal and biparietal diameter was an average of 25.7 mm.

Finally, in 47 other cases the biparietal diameter varied between 68 and 71 mm., average 70 mm. The difference between the two diameters was 23.2 mm.

We therefore concluded that given a biparietal diameter varying from 70 to 85 mm., the extent of the occipitofrontal diameter corresponding would be an average of 25 mm. longer, and *vice versa*.

We are aware that at term this difference between the two diameters is admittedly 25 mm. (average).

If, then, we are able to determine the occipitofrontal diameter we have only to subtract 25 mm. to obtain the biparietal diameter.

The object of our procedure in craniometry is to determine the occipitofrontal diameter, and this is done as follows :

The woman is placed upon her back, and the operator applies his hands to each side of the belly, just as he does when seeking to determine whether or not the head is engaged. If it should happen that this engagement has occurred, there is no use in going further, since labor may set in. If the head is not engaged the woman is placed transversely, clothing and bedding are rolled up and laid on the anterior surface of

¹ L'Obstetrique for November, 1899.

the thighs, where they serve as a cushion which supports the graduated arc of Budin's cephalometer, which is to be forthwith employed.

The ends of the branches of this instrument are grasped near the terminal buttons in such a manner that the latter are held between the middle and the ring fingers, by the tip of the last phalanx of each of the fingers. One should then begin the palpation of the head.

While we palpate with the finger-tips we apply at the same time the buttons of the cephalometer, so that the one is in relation with the forehead and the other with the occiput. When the instrument is *in situ* we read off the figure on the graduated arc, which indicates the distance between the buttons. From the gross measurement we subtract the thickness of the abdominal wall, which we obtain by pinching up a fold of the latter and measuring its thickness directly. The net amount represents the occipitofrontal diameter. If now we remember that a fœtus at term has a biparietal diameter 25 mm. less than the occipitofrontal we further subtract this figure, and thus arrive at the biparietal.

The craniometer which the author recommends is a compass, the branches of which are curved like those of an ordinary spherical compass, but it has two peculiarities :

1. At the extremity of each branch is a flattened blade, so shaped as to be readily held between two fingers. These little blades revolve on their axes in slots which exist in the tips of the branches of the compass. On account of this mobility the fingers of the operator enjoys a corresponding freedom of movement.

When the fingers are in position that end of the blade which corresponds to the palmar surface and projects beyond is furnished with a convex button.

When the cephalometer is to be used the blade is placed between the middle and ring fingers. The hands of the operator then explore any surface whatever wherein a foreign body might occur. If it be a foetal head the fingers readily recognize it, and, wherever they may be, the end of the compass, held between them, is readily arrested and retained by the object sought. In this manner we may easily determine the extremities, and as a consequence the extent of any diameter whatever.

2. The graduated arm of the instrument is divided into millimetres. It moves freely in a groove, which is provided with an index, by which the separation of the buttons may be readily read off.

OBSTETRICAL OPERATIONS.

The Forceps. Durbrisay and Thoyer-Rozat¹ have compiled the following statistics from the Tarnier clinic, November 1, 1896, to March

¹ Obstetrics, June, 1899.

31, 1899: In 4380 accouchements there were 236 cases in which the forceps were applied, about 6 per cent. Of the 236 operations, 25, or over 1 to 10, were high forceps cases for contracted pelvis. Of the 25 high forceps cases the children were extracted dead in 7 instances; deducting 3 cases in which the children were dead before forceps were applied, there remain 4 cases of actual infantile mortality from the operation. Of the 211 ordinary low forceps deliveries there was one case of maternal death from eclampsia and an infantile mortality of 23; but of this number 6 children were dead before forceps were applied, leaving an actual infantile mortality of 17, or 8.2 per cent.

Of the total 236 forceps cases there were 20 cases of fetid lochia, with fever; 15 cases of lymphangitis of the breast and galactophoritis; 20 placental hemorrhages; 4 cases of post-partum eclampsia; 1 case of phlebitis; 3 cases of torn cervix, and 58 perineal lacerations (all instantly repaired; percentage of lacerated perineum, 24.5).

In the discussion it appeared from statements by several participants that the French forceps statistics are much better than those of the Germans. One of the latter, Munchmeyer, in statistics of German forceps operations, reported a maternal mortality of 3.4 per cent., with 85 per cent. of injuries to the soft parts. Maygrier stated that the French have the better instruments and are more skilled in their use.

Perforation and Cranioclastis with the Three-bladed Cranioclast. Walthard¹ contributes a paper upon this subject. He finds that in Switzerland, in the period from 1892 to 1896, inclusive, in 441,539 births there were 15,975 births of dead children, and that of these 248 were craniotomies. Of this number 80 were performed in hospitals and 168 in private houses. It is evident from these statistics that the general practitioner must often perform craniotomy, and that he should be possessed of the safest and most efficient instruments for this operation.

He also draws attention to the injuries which the mother often receives when craniotomy is performed from bruising of the tissues of the birth-canal. He describes a very interesting case in which the anterior lip of the cervix became very much bruised and torn, and in which it was amputated at the time of labor. When the tissue which was removed was examined it was found to contain abundant streptococci.

Much weight is laid upon the importance of crushing the head in each instance before it is extracted. Hence, those instruments which collapse the head by drawing it against the pelvic walls are inferior to those which crush it before extraction. Instruments employed for this

¹ Monatsschrift für Geburtshilfe und Gynäkologie, 1899, Band ix., Heft 1.

operation must be of such a character that they can readily be applied to the foetal head, and so constructed that during the extraction they will not crush or splinter the bones.

Walthard has obtained his best results by the use of a three-bladed cranioclast, and reports eleven cases in which the instrument was successfully employed. The centre branch contains a boring extremity, which is carried deeply into the centre of the foetal head as far as the base. The other blades are then applied to the sides, and the skull thoroughly crushed and removed. The form of instrument employed was that originally devised by Auvard, modified by Zweifel and also by Walthard.

Perforation. W. Zangemeister¹ raises the question as to whether perforation should always be combined with extraction, and says that in Germany it is usual to combine extraction by the cranioclast with perforation, even delaying perforation until such time as it can be immediately followed by extraction. The writer believes, however, that extraction should follow only when necessary, and that in not a few cases perforation alone serves every purpose. In only two text-books has he found specific discussions upon this point: Schroder says that after perforation the case may be left to nature, providing there are no indications for haste; while Spiegelberg advises that extraction should always follow immediately. The latter's reasons are that (1) the expulsive power is often insufficient to deliver the head, either because the latter has not been rendered compressible enough by the perforation, or on account of its position, or because the pains so often cease with the interference; (2) the prolongation of labor can be only disadvantageous because the operation is usually done at a time when the patient has already suffered much, and because the mutilated foetus rapidly decomposes and gives rise to new dangers to the mother, necessitating later extraction under much more unfavorable circumstances; (3) overriding of the fragments may close the opening, or the latter may be pushed out of the middle of the pelvic canal, necessitating a new perforation when extraction is finally undertaken; (4) extraction, properly done, is not dangerous to the mother, and is the less so the earlier it is performed.

The writer concurs with Schroder, and would go yet further in separating the two operations. It is true that in the majority of cases perforation is done at a time when it is best to follow it by extraction; but in many cases in which perforation is not commonly done the operation could be performed with benefit, and expulsion be left to nature. In other cases one may perforate much earlier than is usual, and, so long

¹ Centralblatt für Gynäkologie, October 7, 1899.

as the mother is in no danger, wait; dilatation and expulsion go on rapidly, and pains that have ceased often begin again as soon as the diminished head presses upon the cervix.

Further, the writer takes issue with the statement that it is dangerous to wait after opening the head. The danger of decomposition of the brain and consequent infection of the mother seems really to be very slight; the time is not long, and whether or not germs develop (if they be not introduced with the incision) it is not proven; at all events, the afebrile course of these patients would seem to be against it. Others allege the danger of vaginal lacerations from the fragments of the skull; but the skull is so compressed by the pains and the edges of the bones so firmly retained in their position in the middle of the canal that lacerations cannot occur, while it is doubtful if extraction does not give rise to more numerous and greater unavoidable lacerations; moreover, the objection fails if a trephine opening be made. In any case, however, if an indication for haste arises, extraction can then be done; and if the opening be lost (as very seldom happens) another can easily be made.

Inasmuch as Fritsch has recommended perforation and cranioclasty in certain cases of placenta prævia, in which it has not generally been done, the writer would like to advise that the perforation be performed early, and when haste is not demanded the expulsion be left to nature. This would apply to cases of prolapse of a pulseless cord, of placenta prævia lateralis or other head presentations in which the child is surely dead and delivery is not likely to be effected by means of the pains alone. Here, as Fritsch suggests, there is no objection to a destructive operation, which, therefore, should be performed "as early as possible;" however, if we perforate alone we can do it much earlier. Perforation is here no more dangerous than an examination, and does not require narcosis; extraction, on the contrary, requires anæsthesia, and results in lacerations, while the cranioclast may introduce germs into the cervical region, which is not invaded in perforation. Especially in placenta prævia is spontaneous delivery to be preferred, owing to the lesser danger of cervical tears. Perforation by itself has also the great advantage that we can do it early at a time when the cervix is not sufficiently dilated for extraction with the cranioclast. Dilatation goes on rapidly, the pains increase, and many a labor is terminated by this early perforation alone, much more quickly than would have been the case had we waited for dilatation of the cervix enough to permit of cranioclasty.

The disadvantages of extraction, then, consist in the necessity of an anæsthetic; the forcible emptying of the uterus, which leads to trouble in the delivery of the placenta and to atony, and by which new lacerations are made and infectious material liable to be introduced into the uterus. Labor left to nature after perforation lasts no longer, while

artificial interference is never to be lightly regarded, and cranioclasty much increases the actual dangers.

Cervical Incisions in First Labors. Fochier¹ having noticed that in many cases an abnormal thickening of the cervix delays dilatation in primiparæ, has tried making incisions in the cervical tissue as soon as the cervix will admit the finger. In twenty-four cases in which this was done the period of duration was diminished. The writer believes that by so doing it lessens the chances of foetal mortality. Charles fears that this method may be abused and that the incisions may be the starting-point for laceration. Delore considers it indicated only when labor is extremely slow. Gueniot thinks it should be conserved for cases of anatomical rigidity of the cervix. Doleris holds that to be effective the incisions should involve not only the free border of the cervix, but also the muscular zone above. He prefers dividing the muscular tissue above and rarely interfering with the lower portion of the cervix.

Pregnancy and Myoma of the Uterus. Chrobak² reports a case in which he performed total extirpation of the uterus for pregnancy complicated by a myoma as large as a child's head. An attempt was made under anæsthesia to push the tumor up out of the pelvis, but this was followed by symptoms of peritonitis, and Cæsarean section and hysterectomy were at once performed. Mother and child made good recoveries. Schauta also reports two cases in which pregnancy was complicated by these tumors. In the first, operation was performed because the tumor grew rapidly and occasioned great suffering. In the second the myoma was in the cervix, and was an obstacle to birth. Röntgen-ray pictures were taken of both cases, and serve to illustrate the diagnosis of the position of the tumor. In each case the uterus was entirely removed, and the only difficulty experienced lay in the great blood-supply, which required careful control.

Cæsarean Section, Symphysiotomy, and Craniotomy. The comparative frequency with which the operation of Cæsarean section is performed at the present day, and the success attending it, renders this subject one of the most important in the field both of gynecology and of obstetrics. Recent literature contains a number of valuable articles on this subject, and one of the most interesting, though rather unsatisfactory, is that of Frank³ on the indications for Cæsarean section, based upon the cases for the last eight years at Oluntza Landesgebaranstalt. Perforation of the living child was performed twenty times and Cæsarean section ten times. The mortality in those in which perforation was em-

¹ Congress Obstetrical Society of France, April 6, 1899.

² Centralblatt für Gynäkologie, 1899, No. 34.

³ Schauta's Festschrift, Monatsschrift für Geburts. und Gynäk., January, 1900.

ployed was *nil*, while in the cases of Cæsarean section it was 20 per cent. The author, however, is averse to perforation, and believes that the operation of Cæsarean section is destined to wholly supersede it, and that with the present improved technique it is the easiest of all cœliotomies. He sums up all the indications for Cæsarean section as follows: Absolute pelvic obstruction, when sharp pains are present; this, however, is often difficult to determine. When the conjugate measures 6.5 cm. or less the indication is absolute. If it is thought that the uterus has not been infected, the conservative operation should be performed in all cases. If fever is present, or there is any reason to believe that the uterus has been infected, the Porro operation should be selected.

In moderate degrees of pelvic contraction the indications for operation are much less plain. If the patient is a primipara, who has lain in labor for a long time, with pains still strong, especially if there has been some contusion and laceration of the soft parts, the author considers that the time for the Cæsarean operation has gone by.

Forceps should first be applied and an attempt made to extract the child. If this fails, craniotomy should be performed, for the author holds that Cæsarean section is contraindicated after attempts to apply high forceps or to perform prophylactic version.

It is noteworthy that Frank considers the alternative of Cæsarean section to be craniotomy, and gives the operation of symphysiotomy no consideration.

Hahn¹ reports eleven cases of conservative Cæsarean section with transverse incision of the fundus, and brings the number of reported cases of this operation up to sixty-two. Of these two died from circumscribed peritonitis—one supposedly infected while the uterus was drawn outside the abdomen for the purpose of massage; the other infected along the line of the sutures by germs which it is supposed were previously present within the uterus. Here, it is admitted, a Porro operation was indicated. From these cases an attempt has been made to study the advantages of Fritsch's method of transverse incision of the fundus.

It is claimed by most operators who have developed this method that less hemorrhage is encountered on account of the hæmostatic action of the sutures, since the bloodvessels pursue a transverse course. Hubb, however, encountered profuse bleeding from the incision three times in his eleven operations; but Biddle found the placenta situated at the fundus only eight times in an investigation of 139 cases. As a result of his study Hahn favors the fundal incision when the conservative operation is to be performed.

¹ Centralblatt für Gynäkologie, December 9, 1899.

A curious case of Porro operation for dystocia due to rigid os after seven days of labor is reported by Potocki,¹ in which there was no contraction of the pelvis. The os is described as being absolutely rigid, due to inertia, the result of old inflammatory condition, with cellular infiltration, and was nowise benefited by free incisions. Pinard, in discussing the case, considered that it was one simply of death of the foetus, with the putrefaction and subsequent paralysis of the uterine muscle. When the uterus was opened in the course of the operation the putrid fluid flowed from the wound, and a dead foetus was found. The woman eventually recovered after a protracted convalescence, with double phlebitis and sloughing of the uterine stump, which required subsequent resection. This case is particularly interesting and instructive, when taken in connection with an article of Doktor² on Cæsarean section in septic cases, as showing the importance of removing the infected uterus intact, and if possible without opening it at the time of operation. The author has collected from the literature twenty-one cases of Cæsarean operation upon septic patients. The conservative operation in these cases was followed by a mortality of 40 per cent., while the patients who recovered passed through a protracted septic fever. In those cases in which amputation was performed with extraperitoneal treatment of the stump the mortality was still worse, reaching between 40 and 50 per cent., those who recovered suffering from sloughing of the stump and various septic complications.

The cases treated by amputation of the uterus, with intraperitoneal treatment of the stump, showed a mortality of but 14.27 per cent. It is, however, highly desirable to remove the septic uterus entire, without, if possible, contaminating the abdominal contents. This has been twice successfully performed, the mother recovering without complications.

Doktor's own case, from the clinic at Budapesth, occurred in a multipara who was admitted to the hospital in labor, the birth of the child being impossible on account of a tumor growing from the sacrum. Cæsarean section was positively indicated. On opening the uterus the child was found to be dead and partly decomposed, while the uterus contained gas. The contents of the uterus were carefully kept outside the abdominal cavity and the uterus amputated. A strip of gauze was passed through the cervix for drainage and the upper portion of the stump united. The patient passed through a protracted course of sepsis, and finally recovered from it sufficiently to be removed to the medical ward, where a permanent pulmonary infection—probably tubercular—was demonstrated.

¹ *Comptes-rendus de la Soc. d'Obstetrique*, November, 1899.

² *Archiv für Gynäkologie*, 1899, Band lix., Heft 1.

Abel¹ compares the results of symphysiotomy and Cæsarean section during the last seven years at Zweifel's clinic at Leipsic. Fifty-two Cæsarean sections and twenty-five symphysiotomies were performed. In tabulating the permanent results of the cases of symphysiotomy it is noticed that the slowest recoveries occurred in those cases where there was a marked disproportion between the size of the head and the size of the pelvis. Various methods of closing the symphysis were followed, silk, catgut, silver wire, and no suture material at all being tried in turn. In those cases where no sutures at all were used the best results were obtained. Some motion remained in the joint after operation, but not enough to interfere with the locomotion of the patient. The healing of the soft parts played a more important rôle in the recovery than the uniting of the symphysis itself. In most of the patients the pelvis was subsequently more roomy than before, and not one of them had the slightest difficulty in walking or in working afterward. The operations for Cæsarean section were all equally successful. The Porro operation was never performed, but the uterus was sutured and allowed to remain. In some of the cases in which Cæsarean section had been previously performed it was not found to be necessary to open the peritoneal cavity on account of the adhesions which were present between the anterior abdominal wall and the uterus. Repeated operations for Cæsarean section were well borne and the patients recovered more quickly than those operated upon for the first time. No difference could be detected in the vitality or strength of the children born by this method and those born in the natural way.

Comparing the two methods of operative procedure, both are found by the author to be equally good. Abel holds that, in view of the success obtained from both Cæsarean section and symphysiotomy, the power of procreation should not be taken away at the time of operation unless the patient particularly requests it.

Some valuable statistics in Cæsarean section are found in the article by Braun-Fernwald,² covering a period of the last ten years. During this period at Braun's clinic in Vienna 74 Cæsarean sections were performed, of which 34 were the conservative operation, with a living child. In the 40 cases in which the Porro operation was performed the child was dead four times and twice asphyxiated beyond help.

The mortality of the first series of conservative cases was, for the mother, 8.1 per cent. ; of the second, 11.8 per cent. for the mother and 5 per cent. for the children. The proportion of Cæsarean section to all deliveries at this clinic was 1 to 402 ; at Leopold's clinic, 1 to 225, and at Croback's, 1 to 901.

¹ Archiv für Gynäkologie, 1899, Band lvi., Heft 2.

² Ibid., Band lix., S. 320.

Braun attaches no importance to the particular mode of incision. In the eclampsia of primipara, with a very large child, Braun advocates Cæsarean section. He does not consider that pains are necessary before the conservative operation can be performed, and holds that symphysiotomy is at least as dangerous and not so good as Cæsarean section.

That Cæsarean section, in competent hands, can be performed successfully in almost any case is well illustrated by Cole Baker's¹ report before the Irish Academy of Medicine of a Cæsarean section upon a woman with contracted pelvis, pregnant for the eleventh time, after she had been in labor forty hours. The woman and child both lived. The true conjugate measured 6 cm.

In *Obstetrics* for September, 1899, we find the following editorial paragraph, with which we are in hearty accord: "In their study of 1000 cases of labor occurring in the Johns Hopkins Hospital a most instructive fact is shown, that much the greatest foetal mortality occurred in those cases of pelvic contracture which were of moderate degree, the percentage being 25 in the class having a conjugata vera diameter of from 10.75 cm. to 11.50 cm., and 60 per cent. with the same diameter measuring from 10 cm. to 10.75 cm.; while the mortality was but 20 per cent. where the same diameter was from 9 cm. to 9.75 cm. The number of cases represented is not sufficient to make these particular figures the basis for fixed conclusions, except that they are in harmony with much more extensive figures shown by other writers. The striking import of these figures is that it is in border-line disproportions between foetal and pelvic diameters that we get the worst results for the foetus, and it is border-line cases that are most frequent; that filling the mind of the physician with doubt will cause him to follow the tentative route of cervical dilatation, forceps, version, and possibly basiotripsy. First, the foetus is shocked by severe forceps compression of the brain; then the heart is shocked by the manipulation of the cord necessary in version; and, if it still lives, it must run the gauntlet of asphyxiation. Crushing the after-coming head is not a difficult or dangerous operation to the mother if one has the proper tools—a Braun or Martin basiotribe—but very few general practitioners have such an instrument, or can get one from a neighboring physician, and the operation then becomes very difficult. Did we have all the statistics it would be a close race which causes the greater mortality in obstetrics, puerperal infection or border-line dystocia. Let us put a greater burden of proof upon the physician who would perform version in cases of pelvic contraction; let us demand greater certainty and less tentativeness that he can bring

¹ Dublin Medical Journal, January, 1900.

the head through the pelvis when he has delivered the body. Let us call it by its right name—an obstetrical compromise.”

At the International Congress of Gynecology and Obstetrics, held in Amsterdam in August, 1899, a number of valuable contributions were furnished upon the “Indications for Cæsarean Section as Compared with those for Symphysiotomy, Craniotomy, and Premature Induction of Labor.” Dr. Fancourt Barnes, of London, opened the discussion on this subject. There was no doubt, he said, that the practice of obstetricians of repute in the present day was to widen the limits previously enforced for the performance of the Cæsarean operation. The enormous mortality which attended the operation twenty-six years ago, and which was computed in 1880 from a series of 138 cases, by Harris, at 81.2 per cent., had been so far reduced that in experienced hands it was little higher than that of ovariectomy. Thus, Leopold, of Dresden, had reported fifty cases with a maternal mortality of 8 per cent., and Ohlshausen last year a series of twenty-nine with a maternal mortality of only 6.8 per cent. This result was due entirely to the improvements introduced during this period in the technique of abdominal surgery and especially in the method of suturing the uterine wound. The question, therefore, now arose whether the Cæsarean operation should not be performed in order to save the child in circumstances previously regarded as necessitating craniotomy. Another recent tendency which was becoming more and more manifest was to regard the operations involving the destruction of a living child *in utero* as unworthy of the present high efficiency of the obstetric art. If we set aside, then, craniotomy on the living child there were three alternative procedures, viz., induction of premature labor, symphysiotomy, and Cæsarean section. Induction of premature labor was, of course, limited in its applicability to cases in which the patient came under observation during pregnancy and a prognosis of difficult labor could be established. The limits of pelvic space requisite for the passage of a viable child were recognized and required no comment. The methods of starting labor had received no notable additions in recent years. The maternal mortality of the operation in competent hands was probably not more than 1 to 2 per cent., but the foetal mortality was unfortunately high, being placed by the most successful operators at 33 per cent. No amount of technical skill could diminish this high rate of foetal mortality, for it depended upon conditions over which the operator had no control, viz.: (1) The delicacy of the premature infant and its subsequent liability to suffer from the effects of labor; (2) the frequent necessity for interference during labor owing to malpresentations and deficient uterine action; (3) the liability of the child to perish from malnutrition within the first few weeks of extra-uterine life. The other two alternatives—symphysiotomy and Cæsarean

section—being operations performed at term, naturally offered more favorable chances for the child. Under conditions which prevented the delivery of a living child *per vias naturales* these two operations offered the only practical alternatives. Symphysiotomy must of necessity be very strictly limited in its application by the amount of pelvic space available. The object of the operation was to obtain a temporary increase in the size of the pelvis sufficient to allow the delivery of a live child by forceps, as an alternative to craniotomy. The amount of increase in the conjugate which could be safely obtained in this manner without injury to the sacro-iliac synchondrosis was only half an inch; the operation was, therefore, applicable to only a small number of cases, viz., those which lie just outside the limits within which delivery by forceps or turning can be effected. The mortality of the operation had always been and still remained a large one for a surgical procedure apparently so simple; even in the hands of Pinard the mortality from 1892 to 1896 was 10.84 per cent. for the mothers and 14.5 per cent. for the children. It will be observed that these figures compare unfavorably with those of Cæsarean section already mentioned, the mortality of symphysiotomy being actually more than double that of Cæsarean section. Comparison of Cæsarean section with symphysiotomy, in the light of modern results, seemed entirely in favor of the former. There were no limits to the application of the Cæsarean operation; it could be performed in the worst cases of pelvic contraction; in obstruction by uterine or extra-uterine tumors it offered not only a means of delivery, but also could be combined with complete removal of the obstruction. When the obstructive cause was irremovable the patient could at the same time be rendered sterile, and thus saved from the recurring risk of future pregnancy; it was undoubtedly the most rapid means we possessed of emptying the uterus, and might, therefore, find application in conditions of urgency, apart from obstructed labor; and, lastly, the mortality attending it, both for the mother and the child, was less than that of symphysiotomy, and was steadily diminishing. The following table compares the most recent statistics of the two operations:

	Maternal mortality.	Fœtal mortality.
Symphysiotomy . . .	10.8 per cent.	14.5 per cent.
Cæsarean section . . .	7.6 “	7.6 “

If we now refer to the operations done during the last ten years in the Royal Maternity Charity of London we are met on the threshold of our inquiry by the complete absence of the Cæsarean section. During those years no less than 40,000 women were delivered, and among these deliveries no indication for Cæsarean section had presented itself. The explanation for this remarkable fact was a simple one. It was explained by the absence of pelvic deformity in the city of London. This

absence was undoubtedly due to the improved and still improving hygienic conditions under which the poor of London exist. Craniotomy was required in only 14 cases out of 40,000, which sufficiently proved the rarity of pelvic deformity. The conclusions at which he arrived were: (1) As regards symphysiotomy, he considered that the operation had not justified its existence, and he could not help thinking that in a few years the eminent obstetricians who had been advocating it would abandon its use. (2) Induction of premature labor, within certain limits, would always hold a recognized and useful position among obstetric operations. (3) And lastly, we were forced to the conclusion, after a careful study of the latest figures which have been published on Cæsarean section, that it was a scientific and justifiable operation, and that it would be more widely resorted to in the future, as the science of obstetrics advanced, than it had been in the past.

Dr. Leopold, of Dresden, made a very exact classification of the various degrees of pelvic deformity, and distinguished between the cases of primiparous and those of multiparous women. Three degrees of contraction ought to be distinguished: (1) The conjugata vera was more than 7 cm. in the contracted non-rhachitic or rhachitic pelvis, more than 7.5 cm. in the justo-minor pelvis; (2) the conjugata vera was less than 7.5 cm., but more than 6 cm.; (3) the conjugata vera was less than 6 cm. In the first group primipara generally had a tolerably good labor. When the head did not enter the pelvic brim—perhaps on account of a bad presentation (the case approached the second group)—a distinction was to be made between cases treated in hospital and private practice. In the hospital Professor Leopold did not hesitate to perform the Cæsarean section when all other means had proved useless and when mother and child were in good condition. When the child was in danger he preferred craniotomy—certainly the only legitimate operation when the child was dead. In private practice craniotomy was the only indicated operation when the head was retained by a pelvis too narrow to allow the passage of a living child. Though Pinard had given his opinion that “craniotomy of the living child ought never to be performed,” and that “embryotomy of the living child is condemned,” Professor Leopold, appreciating the ideal view taken by the celebrated French obstetrician, agreed with Dr. Charles, of Liege, “that it is not easy to act up to these rules.” Doubtless craniotomy of the living child ought to be avoided as much as possible, and an operation inoffensive to the child ought to take its place; but in difficult cases in private practice craniotomy, which saved the mother, was preferable to Cæsarean section or symphysiotomy, which gave a considerable maternal mortality. In the third group Cæsarean section alone was indicated, forceps and version being impossible, and the extraction of the child after perforation,

even after symphysiotomy, being very difficult, if not contra-indicated. With multipara the difficulties were greater, because of the great weight of the fœtus and the lesser intensity of the contractions of the uterus and the abdominal walls. In private practice the premature induction of labor, either by the bougie or the intra-uterine bag, was and would be the choice operation in the pelvis of the first group, notwithstanding the brilliant results of Cæsarean section and of symphysiotomy. Many obstetricians had noted from 60 to 80 per cent. living children when the patient left the hospital eleven days post-partum. In the pelvis of the second group craniotomy should be performed when the child was dead. Professor Leopold preferred also craniotomy to other operations when the child was in danger, or the mother exhausted or ill. When the child was in good condition, Cæsarean section or symphysiotomy could be done in hospital practice (personally, Leopold preferred the former operation). In private practice these two operations might be now and then preferred to craniotomy when the obstetrician was very skilful and had sufficient assistance, and when the woman was in very good condition. In the third class of pelvis Cæsarean section was the only operation indicated, alike for primipara or multipara, symphysiotomy being forbidden by the excessive contraction of the pelvis.

Dr. Pinard, of Paris, read a paper which, beside being a reiteration of his well-known views, contained elaborate statistics of 100 symphysiotomies done in the Clinique Baudelocque and of all the cases of contracted pelvis during the year 1898 at the same clinic. He began by defining, according to his ideas, the intrinsic value of each of the four operations under discussion :

Cæsarean Operation. Theoretically, this operations was ideal. Both mother and child were in good condition, and the child underwent no traumatism. Practical statistics bore this out to a certain extent. A *résumé* of Leopold's, Ohlshausen's, and Zweifel's statistics gave the following : The conservative operation, 5.8 per cent. mortality ; the Porro operation, 3.7 per cent. mortality. Such were the results, but by the best operators and in the best condition.

Symphysiotomy. This was an easy operation. He presented detailed statistics bearing upon 106 cases during the past seven years at the Clinique Baudelocque. The maternal mortality, he could claim, was 5 per cent., excluding seven deaths due to outside causes. The infantile mortality was 6 per cent., excluding seven cases in which (1) forceps had been applied at the brim before the operation ; (2) lesions of the cranium which were caused by an incomplete symphysiotomy ; (3) induced labor ; (4) accidental bronchopneumonia. He would remark, in addition, that 22 of the women operated upon had had ulterior preg-

nancies; that of these 6 were operated upon successfully for the second and third time, while 16 had spontaneous labors.

The following article by McKenna, in the *Illinois Medical Journal*, seems to us to make too light of the operation of symphysiotomy and the conditions requisite for its successful performance, and it shows a lack of appreciation of the seriousness of the operation, which is, unfortunately, too prevalent. The radical tendency of many of the profession at the present day cannot but be viewed with some apprehension; and while presenting the author's view we wish to lay special emphasis on the importance of careful daily dressings by the physician himself subsequent to the operation, the constant care of the patient by a skilful and well-trained nurse, and the great importance of an aseptic technique in the performance of the operation. Without such facilities the operation should be undertaken with reluctance. McKenna writes "that the history of the first century of symphysiotomy is one of discouragements; nor does the present maternal mortality in America do justice to the operation. So many have been operated upon when in a hopeless condition that the statistics are misleading. Under the same conditions the prospect for these women under any plan of treatment or any operation would have been unfavorable. Symphysiotomy is so simple, and demands so little in the way of special instruments, that any physician of ordinary ability may perform it. The technique is immaterial so long as it is clean and expeditious. In order for a satisfactory result the patient must be free from sepsis and not exhausted or injured by a long labor or futile efforts to deliver her. The after-treatment demands absolute immobility of the divided symphysis and daily inspection and dressing of the wound by the attending physician. Especially arranged beds and apparatus are convenient, but not absolute necessity to the success of the operation. Ordinary bandages, strengthened and held in place by bands of adhesive plaster, and an ordinary bed, have given good results in the writer's experience. The simplicity of the operation permits of its being done in the patient's home and by her own physician."

Bar, who has reported twenty-two cases of symphysiotomy in *L'Obstetrique*, July 15, 1899, with detailed statements regarding the operations, concludes, after a long paper upon the subject, that the operation has a very limited application. In choosing symphysiotomy we must take into account the very probable injury to the soft parts of the mother, the greater risk of injury and death to the fœtus, and the very considerable danger of infection. It is only in pelves of moderate contraction that symphysiotomy is indicated, as all cases of considerable pelvic contracton should be treated by Cæsarean section or craniotomy.

In a limited class of cases, however, under aseptic precautions and upon patients not exhausted and infected, the operation is successful.

Craniotomy. Here maternal mortality should be *nil*; yet in 81 cases in the Baudelocque Clinique there was a maternal mortality of 11.5 per cent. This was evidently mainly due to sepsis.

Induction of Premature Labor. He acknowledged the innocuousness for the mother, but ascribed to it an infantile mortality of 33 per cent.—a mortality which could never be much reduced.

Continuing, Dr. Pinard laid down the principle that the physician should never destroy life; he had absolutely not the right. Neither had he the right to discuss intervention on the basis of the comparative moral or social value of the life of the mother or child. For these reasons he rejected absolutely both embryotomy on the living child, because it destroyed life deliberately, and also induced labor, because it was attended with so much greater infantile mortality than the other operations. He would admit to discussion only symphysiotomy and Cæsarean section. The advantages in favor of the latter were the following: It was an easy operation, which could be done at the beginning of labor, before either infection of the mother or injury of the child, and extraction was without danger for the child. The danger was the opening of the peritoneum. Symphysiotomy could not be done at the beginning of labor; it was only a preparatory operation, which had to be followed by extraction through the soft parts, which were usually not dilated. He recognized all this, but the immense advantage of not opening the peritoneal cavity made him prefer, without hesitation, symphysiotomy in all cases in which it was practicable; and he was absolutely convinced that in non-infected women it was less dangerous than Cæsarean section.

Dr. Pestalozza, of Florence, concluded that induced labor was justifiable in certain cases. It was altogether without mortality for the mother, with aseptic precautions. Certainly, the foetal mortality was great, but he believed that errors were much more frequently made in inducing it too early than too late, and this would partially account for the high mortality. Symphysiotomy he had done several times, with one death from hemorrhage (rupture of the vagina), and without infant mortality. Cæsarean operation was absolutely indicated with a true conjugate below 7 cm.; above this it was relatively indicated. The conservative operation was to be preferred. As between embryotomy and Cæsarean section in a hospital, the latter was always to be preferred.

Prophylaxis in Obstetrics and Gynecology. James Clifton Edgar¹ states that a large proportion of cases that apply to the gynecologist for

¹ Medical News, February 3, 1900.

relief of crippled pelvic organs owe their invalid condition to mismanagement or avoidable accidents of the pregnant, parturient, or lying-in states.

During pregnancy the prevention of constipation, the proper treatment of anæmia, moderate exercise in the open air, and suitable clothing—in short, a good hygiene is of prophylactic importance in two ways: (1) By providing healthy blood—the best of germicides—and thus forestalling or minimizing the effects of possible septic infection. (2) By increasing muscular and general nutrition—factors of importance in the prevention of subsequent subinvolution. Every pregnant woman should place herself under the care of her physician, and by following his directions keep herself in a healthy condition. One thing should be emphasized in all cases—the avoidance of everything which increases intrapelvic pressure and resulting pelvic congestion. A mixed diet, sufficient in quantity to meet the appetite of the patient, is ordinarily the best, except in morbid conditions, which must be dealt with individually. During labor much may be done to prevent subsequent pelvic troubles:

1. Limiting the duration of labor. Vesico-vaginal fistula is an outcome of protracted labor, and may be prevented by the timely use of forceps. Too prolonged efforts to retard the delivery of the head in order to prevent laceration of the perineum may give rise to permanent relaxation of the muscular structures of the pelvic floor.

2. The immediate repair of lacerations which endanger the muscular structures of the pelvic floor is important, and a mere external inspection is not sufficient to determine the presence or gravity of such lacerations. Deep muscular tears may exist without any external sign. These repairs must always be made with careful antiseptic precautions. Cervical tears need not be immediately repaired unless there is hemorrhage.

3. Rigid attention to asepsis during labor will decrease the number of cases of chronic uterine and peri-uterine inflammation of subinvolution. Strychnine administered in the latter part of pregnancy and during the puerperium tends to secure involution. After the first twenty-four hours following labor the doctor and nurse should insist upon a "rotation of the patient" during the entire puerperium—that is, the patient's position in bed during a given twenty-four hours should be equally divided between the dorsal, abdominal, and right and left lateral postures. Incomplete bladder or bowel evacuation may be prevented by permitting the patient to sit upon a vessel placed in the bed or upon a commode at the side of the bed. This also favors uterine drainage.

Getting up too soon must be avoided. Where there is sagging of the levator ani muscle, a binder made to encircle the pelvis and lower abdo-

men at a level with the crests of the ilia, and with a strap of the same material tightly drawn between the thighs and pinned to the binder. Corset lacing down the front or back secures a snug-fitting of the binder. The use of this binder may be continued for three months. It lessens the danger of displacements of the pelvic organs, supports the pelvic floor, assists in the union of lacerations, prevents pelvic congestion, and adds greatly to the feeling of comfort and security.

ECTOPIC GESTATION.

A number of interesting and instructive cases under this head are reported in the current literature.

The possibility of a primary ovarian pregnancy is denied by many authors; the majority, however, while admitting the possibility of ovarian pregnancy on theoretical grounds, consider that a true primary ovarian pregnancy has never been proven.

In his valedictory presidential address on the subject of extra-uterine gestation, delivered before the British Gynecological Society in January, 1898, Professor Mayo Robson spoke of primary ovarian pregnancy as "theoretically possible, but not proven."

Bland Sutton,¹ in 1897, disposes of the subject in the following words: "Until some specimen is forthcoming in which an early embryo in its membranes can be demonstrated in a sac inside the ovary, we need not trouble ourselves to discuss ovarian pregnancy.

In view of these statements, the case reported by Tussenbroeck² is particularly interesting. The clinical history was that of a typical extra-uterine pregnancy. The woman was thirty-one years old, the mother of five children, and had always been well. She passed two weeks over her usual menstrual period, and then became suddenly ill and showed pronounced symptoms of internal hemorrhage. A diagnosis of ruptured extra-uterine pregnancy was made and laparotomy immediately performed.

Large quantities of blood and fluid were found in the abdomen. On hasty examination in the Trendelenburg position the uterus was found to be soft and somewhat enlarged; the left tube and ovary normal and the right tube normal. The right ovary was capped by a tumor about the size of a walnut and covered with coagulated blood.

The tumor was not adherent to the tube or other organs, and both tube and ovary were removed. Examination of the specimen, which was hardened in alcohol, showed that the fimbriæ were slightly adherent

¹ "A System of Gynecology." Allbutt and Playfair

² Centralblatt für Gynäkologie, 1899, No. 37.

to the ovary, but the tubal abdominal ostium was patulous. No pathological adhesions between the tube and ovary were present. In the centre of the small tumor on the surface of the ovary there was an opening, with fringe-like protection. Before making transverse section of the tube and ovary it was seen that the tumor contained a cavity in which was a small embryo attached by a relatively thick cord to the wall of the sac. The placental structures were identical with those found in the normal uterus. The chorionic villi were covered with two layers of cells, the syncytial layer being typical. There can be no question that this case should be accepted as an authentic primary ovarian pregnancy.

J. B. Perkins¹ reports a case of tubal pregnancy on the right side, with dermoid cysts of both ovaries and almost complete obliteration on the left tube. This patient had a very irregular menstrual history. When most regular the periods were several months apart, often being for six or eight months. The clinical aspect, treatment, and result after operation are of no special interest.

Caekovic² records the case of a patient which is of interest from the stand-point of treatment of the placenta. The patient, about a year before consulting him, had noticed a tumor on the right side, which grew steadily larger and caused much suffering. Ectopic pregnancy was diagnosed and immediate laparotomy performed. A six-months' macerated foetus was found lying free in the abdominal cavity, while the placenta and membranes were adherent to the intestines and could not be removed for fear of hemorrhage. The Mikulicz method of tamponade was, therefore, followed, and the patient made a slow recovery.

Heinicus³ reports an unusual case in which one tube contained two products of gestation at different periods of development.

The patient presented a large abdominal tumor, in which extra-uterine pregnancy was not suspected. The cervix was distended with laminaria, after which the patient developed peritonitis and died.

On post-mortem examination the tumor was found to be formed of an enormously enlarged left tube, and contained two foetuses at term. One foetus was well preserved, while the other was almost entirely disintegrated and must have perished several years previously.

The history of the patient showed that about six years before she had cessation of menstruation, nausea and vomiting, and an abdominal swelling. About a year later the menses returned and the abdomen

¹ Medical News, November 4, 1899.

² Centralblatt für Gynäkologie, 1899, No. 47.

³ Archiv für Gynäkologie, Band iv., Heft 1.

decreased in size. In the light of the history and the finding at the autopsy, the author concludes that the patient's left tube became twice pregnant at an interval of six years.

Under the title of "A Study of the Embedding of the Ovum in the Tube in Extra-uterine Pregnancy," Futh,¹ first assistant in Sanger's gynecological clinic in Leipsic, has published a valuable and interesting paper. The study was based upon the examination of a specimen of tubal gestation of a very early date, the main object of the paper being to determine the presence or absence of a decidua reflexa in cases of tubal pregnancy.

Authorities disagree whether or not a reflexa forms in these cases. Klein admits that a reflexa may form, but holds that it has not been proven. Frankel has studied four cases and found no trace of reflexa, and, while not denying the possibility of its formation, considers that in no reported case has it ever been proven.

In order to prove the presence of a reflexa, Frankel has formulated the following postulates :

1. It is necessary to prove in serial sections that we are not dealing with a fold, which disappears upon cutting serial sections ; also, that a covering in contact with the ovum is closed or was so.

2. It is desirable to have a picture of the whole section of the entire tube in which we find the reflexa, so that it is possible to locate the point of attachment as well as its two borders.

3. The objection must be met that an artificial formation of a fold in the vera, as may easily result in a specimen removed by operation, may readily simulate a reflexa.

4. It must be demonstrated what relation the chorionic villi bear to the point of attachment as well as to the reflexa.

5. A conception of a reflexa demands a decidual character. A reflexa must be composed of some connective tissue and isolated smooth, muscular fibres ; the presence of marked muscular layers and a complete mucous membrane make it impossible to designate such a formation as "reflexa."

These postulates well present the modern stand-point on the question of reflexa formation in the tube.

The author's case was that of a woman, aged twenty-six years, who had menstruated from November 29th until December 1st. On December 9th she had pain and menorrhagia. A diagnosis of incomplete tubal abortion was made and laparotomy performed. The ovum was found to have ruptured into the lumen of the tube and hemorrhage to have occurred profusely into the abdominal cavity through the abdom-

¹ Monatsschrift fur Geburtshilfe und Gynakologie, December, 1898.

inal ostium of the tube. No fœtus was found. The tube was cut longitudinally through the developing ovum, and then serial sections made in cross-sections from each half. From a microscopical study of these preparations the author concludes that his case meets the requirements in the postulates as laid down by Fränkel.

While demonstrating to his own satisfaction that his case proves a reflexa, it cannot be accepted that the author has satisfactorily proven his point. The text is well illustrated, and the paper is an important contribution to the study of the formation of the tubal gestation sac and the early development in the tube.

Early Ruptured Tubal Pregnancy. Erck has reported before the Philadelphia Pathological Society during the past year an exceedingly interesting and very early case of ruptured tubal pregnancy in which the fœtus is estimated to be less than two weeks old. After removal a photograph was immediately taken of the specimen. Being called in consultation he found a colored woman, aged twenty-five years, who had been married two years, and had given birth to a child two years previously, but had had no miscarriages. Her menstrual periods had always been regular, and lasted but four days. No ill results had followed the birth of her child, and there was no history of a leucorrhœal discharge. On July 19th her menses appeared on time—the previous period having been normal—but lasted only two days. On all previous occasions it had lasted not less than four days. The evening of July 21st the woman partook promiscuously of watermelon, ice-cream, and cucumbers. During the following night she was seized with violent cramps in the lower abdomen and repeated vomiting. While at the closet she fainted, but managed to return to her room, and sent for her physician, who saw her first at 10 o'clock the next morning. At that time the case seemed to be one of colic, the result of indiscretion in eating. The patient's bowels had not moved for eight days previously, but at this time calomel in large doses and a purgative enema were given. She became, however, rapidly worse, and at 3 P.M. Erck was called in and saw her for the first time. The woman was in a stupor, so that she could not be roused to answer questions—her friends having supplied her freely with gin. The pulse was small and very rapid, the abdomen somewhat distended, and a cold, clammy sweat covered the whole body.

There was dulness on percussion in both flanks. A bimanual vaginal examination showed the uterus in proper position and about normal in size; but near the right corner a small mass could be felt, which, when pressed upon, caused the patient to writhe in her stupor.

A diagnosis of ruptured tubal pregnancy was then made and the patient hurried into the hospital, one block away, and a laparotomy

performed within an hour. Upon opening the abdomen the abdominal cavity was found nearly filled with fluid blood, which gushed out of the opening made by the knife. A small mass in the continuity of the left tube (which was actively bleeding), the tube itself, and the ovary upon the same side were all seized, immediately ligated, and removed. The appendages upon the other side appearing normal were left behind. Clots and free blood were removed hastily, without irrigation, and the abdomen closed without drainage. The patient made a good recovery and left the hospital twenty-four days after admission.

This case is of particular interest in that it furnishes us with a ruptured specimen of very early date, and illustrates the importance of immediate operation upon these patients, even if they are *in extremis*.

Consecutive Ectopic Gestation. E. R. Smith¹ gives an interesting account of an operation upon a primipara on April 11, 1899, for ruptured ectopic gestation of the right tube. The tube was removed with the clots, and the patient made a good recovery, although she afterward suffered from nervousness and insomnia. She then menstruated regularly until January, her last period being on December 17th. On January 30th, after severe pain and hemorrhage, she passed a membrane, which was thought to be a product of conception. Her attending physician advised curettage, but it was declined. The pain and hemorrhage continuing, she was brought to the hospital at Los Angeles on February 12, 1900, and the abdomen opened by median incision through the old scar. The ruptured left tube was now removed. A mass of six or eight ounces of blood-clot enclosed in the folds of the broad ligament was cleaned out, and the operation completed in the usual way. The recovery was rapid and uneventful. The point of particular interest in this case is the fact that each tube should have become the seat of an ectopic gestation with but a few months' interval.

Philander A. Harris² reports two similar cases of this unusual occurrence. The first patient had borne three children; no miscarriages. On September 16, 1896, after an interval of six weeks since her last menstruation, she was seized with severe colicky pains, followed by great soreness over the lower part of the abdomen, associated with nausea. These symptoms continued at intervals with more or less severity for four days, when she was seized with such terrible pains that she was almost unconscious, and her physician advised her removal to the General Patterson Hospital. She was taken directly to the operating-room. Her temperature was 97° F.; her pulse 170 and hardly perceptible at the wrist. On opening the abdomen "pounds of clots and pints of

¹ Southern California Practitioner, April, 1900.

² Medical News, April 14, 1900.

blood, but no foetus was found." All bleeding-points were tied, the cavity cleansed, and incision closed. Saline solutions per rectum and the usual restorative treatment were used. The patient left the hospital in twenty-five days, in health. Menstruation was regular until the spring of 1899, when she missed the April period. On May 5th she had colicky pains and a little bleeding, but both ceased until the last of the month, when she had several attacks of pain, but none very severe. From then until July she had some bleeding, with clots and pain almost every day. June 21st she was curetted by her physician without relief. On July 2d she was operated on as before, and blood was found in the abdominal cavity, and a thin-walled hæmatoma—the result of a tubal gestation—larger than a child's head rose from the right horn of the uterus. The patient recovered.

In the second case the patient had one child, eleven years old; no miscarriages. Menstruation was always regular. In March, 1899, when twelve days over time, she had an attack of hemorrhage and pain for six days. From then until April 28th she had frequent attacks of severe pain and almost continuous bleeding, with occasional clots. On April 28th, at the hospital, a suprapubic incision was made and a small foetus was seen, accompanied by clots and much blood. The bleeding-points were tied, the abdominal cavity cleansed, and a gauze drain placed through the cul-de-sac into the vagina. The patient recovered quickly, and menstruation was regular until December, when she went ten days over her time and had an attack of pain, with hemorrhage. Pain, tenderness on the left side, and a brownish discharge continued until January 15th, when abdominal section was performed, revealing a ruptured left tube and clots and blood in the peritoneal cavity. The patient recovered soon from this operation also.

Tubal and Abdominal Gestation. Landau¹ has described tubal pregnancy upon the right side, which ruptured in the fifth month with considerable pain and shock to the patient. She continued, however, to improve, and abdominal section was delayed until the eighth month. On opening the abdomen the child lay among the intestines without an amniotic sac. The child was living and survived nearly twenty hours. It was impossible to make a pedicle and thus to remove the placenta immediately. The patient made a good recovery.

Kreisch reports from Martin's private hospital in Berlin five cases of tubal pregnancy in which the diagnosis was made and the operation performed. The paper is interesting as illustrating the advantages of operating through the vaginal wall in these cases. In two of these patients it was possible to remove the tube and contents completely

¹ Monatschrift für Geburtshilfe und Gynäkologie, 1899, Band lx., Heft 6.

through the anterior wall of the vagina. Patients operated on in this manner made a more speedy convalescence and with less disturbance than those treated by abdominal section.

The *Journal of Obstetrics* has an interesting account of uterine pregnancies mistaken for ectopic gestation. Lepage read a paper on this subject before the Societe d'Obstetrique, May, 1899, in which he stated that this diagnostic error resulted in some instances in which the patient's account of her pregnancy was erroneously interpreted, and also occurred from a faulty interpretation of the results of digital and instrumental examination. The possibility of extra-uterine pregnancy was sometimes thought of in connection with metrorrhagia, rectal and vesical symptoms, and abdominal pains. In certain cases digital examination appeared to reveal an extra-uterine pregnancy, when the actual condition was a uterus strongly inclined to one side. In introducing a catheter into the uterus to clinch the diagnosis of extra-uterine pregnancy it happens at times that the sensations imparted by a normal uterus are imitated by the gravid uterus.

Lepage relates two instances of this sort, as follows: One was reported by Hugnier in 1852. A tumor in the utero-rectal cul-de-sac had imparted a sensation of a fœtus. The other case was reported by Pajot. Here the uterine wall was so thin that a diagnosis of abdominal pregnancy had been made. To these two observations Lepage adds four others, heretofore unpublished, viz., (1) woman pregnant; pre-existing right salpingitis. She fell from a bicycle and experienced pain and hemorrhage. Her physician found the uterus apparently empty, and made a diagnosis of extra-uterine pregnancy. Lepage, called in consultation, found a response to ballottement, and therefore rectified the diagnosis. (2) Woman ten months pregnant. As the fœtus was transversely placed and superficially seated, the physician concluded that the pregnancy was ectopic. The woman was subsequently delivered of twins. (3) Ovarian cyst, mistaken for normal uterus. Woman actually seven months pregnant. (4) Woman six months pregnant; exhibited symptoms of peritoneal irritation. Uterine wall thin; body seemed distinct from the cervix. The peritoneal symptoms turned out to be the initial stage of appendicitis. Patient delivered normally at term.

Lepage's article refers to ectopic gestation which has passed the sixth month.

The Treatment of Operable Cancer of the Uterus at the End of Pregnancy. Thorn,¹ in discussing this much debated subject, concludes that the life of the fœtus, under this condition, equals in value

¹ Münchener medicinische Wochenschrift, 1899, Nos. 21 and 22.

that of the mother, indicating Cæsarean section if the extraction *per vias naturales* is difficult or dangerous. If the child is dead the uterus should be emptied of its contents and extirpated *per vaginam*. If labor has commenced, dilatation of the cervix may be awaited; but if delayed, delivery must be effected, after which immediate removal of the uterus is advised. Expectant treatment during pregnancy, even for a brief period, is absolutely condemned. In cancer of the portio, both foetus and uterus should be removed *per vaginam*, if this can be done without difficulty. If splitting of the cervix should be necessary, divide the anterior wall. The uterine arteries must not be ligated before delivery of the child has been accomplished. Obstruction to delivery from cancer of the portio indicates abdominal section and removal of the foetus and uterus through the abdominal incision. The abdominal wound should then be closed and the cervical stump extirpated *per vaginam*.

COCCYGODYNIA.

In the *University Medical Magazine* for May, 1900, Dr. B. C. Hirst has given us an exceedingly valuable article on the subject of coccygodynia, based upon ten cases met with in an extensive practice of fourteen years. After a brief review of the history of the operation of coccygectomy for coccygodynia, Hirst says:

"There is a tendency of gynecological authors, developed lately, to forget an important and not infrequent disease of women that has had an unfortunate influence upon practice. In two of the cases about to be described the patients had each been in the hands of several gynecologists of repute, without the slightest relief. As soon as the real cause of their symptoms was discovered and removed they were immediately cured.

"It may be worth while, therefore, to call the attention of a larger circle of readers to a disease which has, I think, been too much ignored of late, and to present a record of personal experience embracing ten cases in which excision of the bones was required. Of this number seven were due to injuries in labor, one to a fall, and two to a diseased condition of the joint between the first and second bones in women who had not borne children and had not met with an accident. In addition to these ten cases I have seen a larger number in which there was temporary pain in a coccygeal joint following labor, due no doubt to a strain of the anterior ligaments of the bone, but disappearing after some months.

"ETIOLOGY AND PATHOLOGICAL ANATOMY. The pain in the coccygeal joints after labor is easily understood. The backward displacement of the bone by the foetal head in exceptional cases ruptures a joint, breaks

the anterior longitudinal ligaments of the bones, or, if there is complete ankylosis of all the joints, may cause an oblique fracture of a coccygeal

FIG. 8.



Disease of first coccygeal joint with abnormal mobility.

FIG. 9.



Disease of first coccygeal joint with abnormal mobility.

vertebra itself, as happened in one of my cases. The same explanation suffices for coccygodynia after a fall on the buttocks, except that the

FIG. 10.



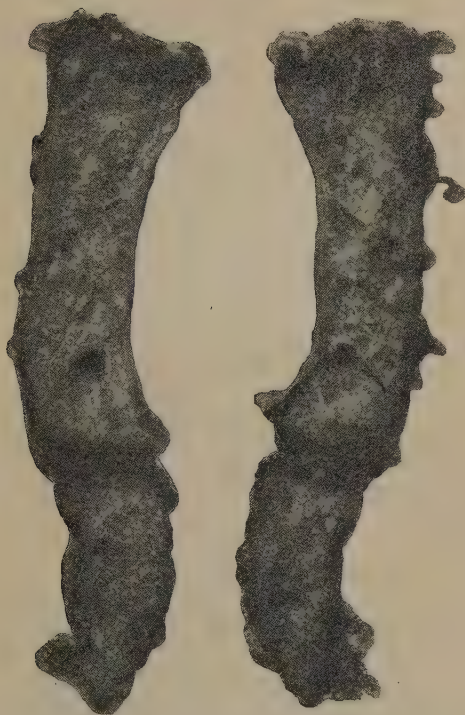
Rupture of first coccygeal joint in labor.

FIG. 11.



Rupture of second coccygeal joint in labor; all the other joints ankylosed.

FIG. 12.



Rupture of second coccygeal joint in labor.

FIG. 13.



Rupture of first coccygeal joint by a fall on the ice in the eighth month of pregnancy. Aggravated by labor.

force is exerted in an opposite direction; the bone is usually driven inward instead of outward, and the posterior ligaments are ruptured. After the accident, no matter how caused, the muscular and ligamentous attachments of the bone give it no rest, and so the injury cannot heal. With every step, with every effort to sit down or rise up, with every movement of the sphincter ani, the bone is pulled upon and moved. The torn fibres of the ligaments or the ruptured joints are thus constantly dragged apart and are never permitted to unite firmly.

"The explanation of coccygodynia in a woman who has not borne a child or met with an accident is more difficult, and is not yet quite satisfactory. In two cases of the kind under my observation there was abnormal mobility of the joint between the first and second coccygeal vertebrae, and a thickened, abnormally soft intervertebral disk between the bones. All the other joints, including the sacrococcygeal, were firmly ankylosed. My own belief is that this variety of coccygodynia occurs in women with ankylosis of all the coccygeal joints except that between the first and second bones, and that some cause in them determines an abnormal movement of this single joint; perhaps hard work or exercise; possibly violence in coitus or the passage of large, firm masses of feces from the rectum. Once the joint or its ligaments are overstretched the sprain is never relieved, on account of the muscular and ligamentous pull upon the bones already described. A neurasthenic element or a nervous hyperaesthesia may have to be considered in such cases, but it is not the main factor in the symptoms.

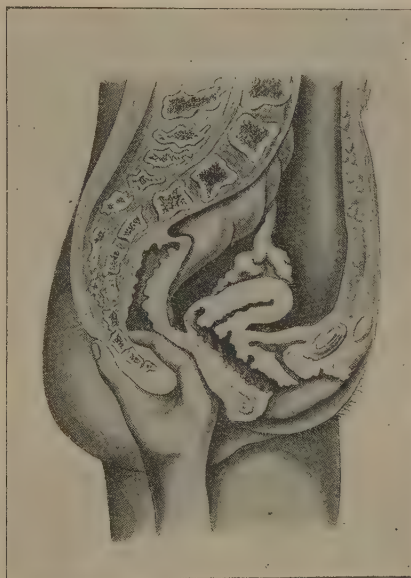
"On entering practice my attitude toward coccygodynia was one of suspicion. Closely associated with Dr. William Goodell, I had imbibed his idea that the coccygeal pain was usually a manifestation of hysteria. In more than fourteen years of active special work, however, I have not yet seen a purely hysterical coccygodynia—that is to say, the typical symptoms of the disease with a perfectly normal, uninjured bone. Another common fallacy is the idea that coccygodynia is often an expression of rheumatism. This belief had its origin in Simpson's description of his first case. I have not yet seen an example of rheumatic coccygodynia. Two of the women on whom I was obliged to operate were referred to me for a pelvic examination, with the statement that the patients, in addition to pelvic lesions, had 'rheumatic coccygodynia.'

"Following the discovery by Luschka of the coccygeal gland, there was a disposition in some quarters, as there is still, to attribute the pain of coccygodynia to injury or disease of the gland to which the 'nerve-supply is so rich that one is inclined to regard it as part of the nervous system' (Luschka). There is, however, no valid argument in favor of this view, and there is much against it.

"The pathological anatomy of the ten specimens removed by opera-

tion may be summarized: In six there was a rupture of a coccygeal joint or of the ligaments supporting it (in two the first coccygeal joint was afflicted; in four the second); in all these cases the intervertebral disk of the injured joint was thickened and softened; in one case there was complete ankylosis of the whole bone, which ran in a straight line from the sacrum downward, so that whenever the patient sat down she felt as though she was sitting on a nail; in two cases there was a softening and an hypertrophy of the intervertebral disk of the first joint, with relaxation or overstretching of the ligaments, and in the one remarkable, and I believe unique, specimen there was an oblique fracture through the second coccygeal bone. In a case upon which I did not operate, because there were no symptoms, the bone had been fractured at right angles to the upper, and was firmly ankylosed in this position. As there was no mobility there was no pain, but there would be in such a case difficulty in a subsequent labor.

FIG. 14.



The test for a ruptured coccygeal joint.

“SYMPTOMS AND DIAGNOSIS. The distinctive manifestation of the pain of coccygodynia is pretty well understood, so that it need be simply mentioned. The greatest pain is experienced in sitting down and in rising from a sitting posture. In the former act the patient rotates her body on its long axis and lets the weight of her trunk fall upon one tuber ischii. When she rises she puts the palmar surface of one hand upon

the seat of her chair and pushes herself up by her arm, so as to spare the gluteal muscles and those of the pelvic floor. It is also generally known that pressure over the coccyx elicits pain. There is, however, a sign of injury to the coccygeal joints and of a consequent coccygodynia not generally known, but which is to my mind by far the most distinctive, and on which I always depend in making the diagnosis. If the coccyx is caught between the finger in the rectum and the thumb in the crease of the nates, the lower fragment below the ruptured joint may be thrown out of the line of the upper fragment. At the same time the abnormal mobility of the bone may be demonstrated, and the sharp ridge of the upper fragment may be felt when the lower fragment is pushed backward. It is impossible to do this with a normal bone.

“In a very thin subject the displacement forward of the lower fragment leaves a sharp ridge of bone at the lower end of the upper fragment that irritates the skin over it. In a patient of Dr. John K. Mitchell’s the skin at this point was thickened, red, very sensitive, and from time to time acutely inflamed. In this same patient there was a constant distressing pain along the spinal column from the nape of the neck to the end of the spine.

“TREATMENT. The only treatment of coccygodynia worth considering is coccygectomy. Simpson, who advocated enthusiastically the subcutaneous severance of all soft tissues attached to the coccyx, confessed that the operation had occasionally failed. If the injury to the bone occurs in labor, or is the result of a fall or a blow, it is justifiable to wait some months for a spontaneous recovery. I have seen a number of cases after labor in which the pain disappeared after six months, so that I should always be inclined to wait that long unless the patient’s sufferings were too severe or had too serious an effect upon her nervous system.

“The technique of coccygectomy may be thus described: The woman is placed in the Sims posture. The skin over the coccyx is cleansed by the operator after the patient has been anæsthetized. A straight incision is made in the raphé from the tip of the coccyx to the end of the sacrum, down to the bone. The tissues are separated by retractors and with a heavy scissors, sharp-pointed and curved on the flat; all the soft structures are cut loose from the bone. The forefinger of the left hand inserted under the bone acts as a guide and protects the rectum. If there is anchylosis of the sacrococcygeal joint it is difficult to tell when the top of the coccyx is reached, and the mistake is easily made of leaving a part of the coccyx behind. The *alæ* of the first coccygeal bone are the best guides. The dissection must extend above these points. Into the cavity beneath the isolated coccyx a sponge is stuffed, to catch fragments of bone or bone-dust and to control hemorrhage. A

chain-saw is slipped under the bone and pushed up so that it takes off the tip of the sacrum. Two or three to-and-fro movements sever the bone. The only vessel, as a rule, requiring ligation is the median sacral artery, which is tied with catgut. A drain of five strands of silkworm-gut is laid in the rather deep wound, which is united with five or six interrupted silkworm-gut sutures. The wound is scarcely distinguished from the raphé after a few weeks.

“The result of the operation is usually most gratifying. In the notes taken by Dr. Mitchell of his case it is stated: ‘Coccyx operation two weeks ago. Instant relief of spine tenderness in the neck, shoulder, and lower back;’ and, a month later, ‘now no pains, no backache, still some neurasthenia; has gained twenty pounds.’ In another patient there was a gain in weight of sixty pounds in the first six months after the operation.”

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